Date:______________ **1.5 Simplifying Rational Expressions**

Definition: A **rational expression** is of the form $\frac{f}{g}$, where f and g are polynomials and $g \neq 0$.

To simplify rational expressions: ***i)*** *factor the numerators and denominators fully*
ii) *state any restrictions on the variables in the denominators*
iii) *reduce*

1. Simplify each of the following. State any restrictions on the variables.

a) $\frac{\cancel{3}^{-1}a^3b^2c}{\cancel{-9}_{3}ab^5c^2}$

If $-9ab^5c^2 \neq 0$ then: $a \neq 0$, $b \neq 0$, $c \neq 0$

$= \frac{-a^2}{3b^3c}$

b) $\frac{x(x-5)(2x+4)}{(x^2+2x)(2x-3)}$

$= \frac{2\cancel{x}(x-5)\cancel{(x+2)}}{\cancel{x}\cancel{(x+2)}(2x-3)}$

$= \frac{2(x-5)}{2x-3}$

If $x(x+2)(2x-3) \neq 0$ then: $x \neq 0$, $x \neq -2$, $x \neq \frac{3}{2}$

2. Simplify each of the following. State any restrictions on the variables.

a) $\frac{20x^3+5x^2-10x}{5x}$

$= \frac{\cancel{5x}(4x^2+x-2)}{\cancel{5x}}$

$= 4x^2+x-2, \quad x \neq 0$

b) $\frac{4x^2-4x-15}{4x^2+16x+15}$

$= \frac{\cancel{(2x+3)}(2x-5)}{(2x+5)\cancel{(2x+3)}}$

$= \frac{2x-5}{2x+5}, \quad x \neq -\frac{5}{2}, \frac{-3}{2}$

c) $\frac{3y-2x}{4x-6y}$

$= \frac{-2x+3y}{4x-6y}$

$= \frac{-\cancel{(2x-3y)}}{2\cancel{(2x-3y)}}$

$= -\frac{1}{2}$

If $2x-3y \neq 0$, $2x \neq 3y$ then: $x \neq \frac{3}{2}y$

d) $\frac{9y^2-6y+1}{9y^2-21y+6}$

$= \frac{(3y-1)(3y-1)}{3(3y^2-7y+2)}$

$= \frac{\cancel{(3y-1)}(3y-1)}{3\cancel{(3y-1)}(y-2)}$

$= \frac{3y-1}{3(y-2)} \quad y \neq \frac{1}{3}, 2$

e) $\frac{x^2-2xy-8y^2}{16y^2-x^2}$

$= \frac{(x-4y)(x+2y)}{-(x^2-16y^2)}$

$= \frac{\cancel{(x-4y)}(x+2y)}{-\cancel{(x-4y)}(x+4y)}$

$= \frac{-(x+2y)}{x+4y}$

or $= \frac{-x-2y}{x+4y}$ or $= -\frac{x+2y}{x+4y}$ $\quad x \neq 4y$, $x \neq -4y$

f) $\frac{x^3-x^2+4x-4}{x^4+3x^2-4}$

$= \frac{x^2(x-1)+4(x-1)}{(x^2+4)(x^2-1)}$

$= \frac{\cancel{(x-1)}\cancel{(x^2+4)}}{\cancel{(x^2+4)}\cancel{(x-1)}(x+1)}$

$= \frac{1}{x+1}, \quad x \neq -1, 1$

(Note: $x^2+4 \neq 0$
$x^2 \neq -4$ has no solution
$\therefore$ no restriction for this factor)

HW. Exercise 1.5

Date:________________ **1.6 Multiplying and Dividing Rational Expressions**

Rules: ***i)*** *express as a product* ***ii)*** *factor the numerators and denominators fully*
iii) *state restrictions on the variables* ***iv)*** *reduce*

Ex. Simplify and state restrictions on the variables.

a) $\frac{12x^3}{7y^4}\times\frac{14y^2}{8x^2}\div\frac{2x^2}{1}$

$= \frac{\overset{3}{\cancel{12}}x^3}{\underset{1}{\cancel{7}}y^4}\cdot\frac{\overset{1}{\cancel{14}}y^2}{\underset{2}{\cancel{8}}x^2}\cdot\frac{1}{\underset{1}{\cancel{2}}x^2}$

$= \frac{3x^3y^2}{2y^4x^4}$

$= \frac{3}{2xy^2}$, $x\neq 0, y\neq 0$

b) $\frac{63a^3c^2}{45ab^2}\div\frac{36a^2bc^4}{-15ab^3c}$

$= -\frac{\overset{7}{\cancel{63}}a^3c^2}{\underset{3}{\cancel{45}}ab^2}\cdot\frac{\overset{1}{\cancel{15}}ab^3c^1}{\underset{4}{\cancel{36}}a^2b^1c^4}$

$= -\frac{7a^4b^3c^3}{12a^3b^3c^4}$

$= -\frac{7a}{12c}$, $a\neq 0$, $b\neq 0$, $c\neq 0$

c) $\frac{6x-3x^2}{4x+20}\div\frac{9x^2-18x}{3x+15}$

$= \frac{-3x^2+6x}{4x+20}\cdot\frac{3x+15}{9x^2-18x}$

$= \frac{\overset{-1}{\cancel{-3x}}(\cancel{x-2})}{4(\cancel{x+5})}\cdot\frac{\cancel{3}(\cancel{x+5})}{\underset{3}{\cancel{9x}}(\cancel{x-2})}$

$= -\frac{1}{4}$, $x\neq -5, 0, 2$

d) $\frac{2x+6y}{x^2+7xy+10y^2}\times\frac{x^2+3xy-10y^2}{x^2-4y^2}$

$= \frac{2(x+3y)}{(\cancel{x+5y})(x+2y)}\cdot\frac{(\cancel{x+5y})(\cancel{x-2y})}{(\cancel{x-2y})(x+2y)}$

$= \frac{2(x+3y)}{(x+2y)^2}$ $x\neq -5y, -2y, 2y$

e) $\frac{2a^2+a-15}{6a^2+3a}\div\frac{a^3-9a}{2a^2-5a-3}\div\frac{6a^2-11a-10}{3a^2+5a+2}$

$= \frac{2a^2+a-15}{3a(2a+1)}\cdot\frac{2a^2-5a-3}{a(a^2-9)}\cdot\frac{3a^2+5a+2}{6a^2-11a-10}$

$= \frac{(\cancel{2a-5})(\cancel{a+3})}{3a(\cancel{2a+1})}\cdot\frac{(\cancel{2a+1})(\cancel{a-3})}{a(\cancel{a-3})(\cancel{a+3})}\cdot\frac{(\cancel{3a+2})(a+1)}{(\cancel{3a+2})(\cancel{2a-5})}$

$= \frac{a+1}{3a^2}$ $a\neq -3, -1, -\frac{2}{3}, -\frac{1}{2}, 0, \frac{5}{2}, 3$

HW. Exercise 1.6

Date:_____________ **1.7 Adding and Subtracting Rational Expressions**

Rules: ***i)*** *fully factor the numerators and denominators of each rational expression stating restrictions on the variables and reducing if possible*

ii) *find the lowest common denominator (LCD) and rewrite each rational expression with the LCD as the denominator for each, and then add or subtract numerators*

iii) *simplify the resulting rational expression , if possible*

Ex. 1. Simplify and state any restrictions on the variables.

a) $\dfrac{2x-3}{2x}+\dfrac{1-4x^3}{4x^3}-\dfrac{5-9x}{6x^2}$ LCD $=12x^3$

$$=\frac{6x^2(2x-3)+3(1-4x^3)-2x(5-9x)}{12x^3}$$

$$=\frac{12x^3-18x^2+3-12x^3-10x+18x^2}{12x^2}$$

$$=\frac{3-10x}{12x^2}\quad , x\neq 0$$

b) $\dfrac{ab^2+2}{2ab^2}-\dfrac{b+2}{2b}+\dfrac{2}{1}$ LCD $=2ab^2$

$$=\frac{1(ab^2+2)-ab(b+2)+2ab^2(2)}{2ab^2}$$

$$=\frac{ab^2+2-ab^2-2ab+4ab^2}{2ab^2}$$

$$=\frac{4ab^2-2ab+2}{2ab^2}$$

$$=\frac{\cancel{2}(2ab^2-ab+1)}{\cancel{2}ab^2}$$

$$=\frac{2ab^2-ab+1}{ab^2}\quad , a\neq 0,\ b\neq 0$$

c) $\dfrac{x+4}{x-3}+\dfrac{4x-5}{3-x}$

$$=\frac{x+4}{x-3}+\frac{4x-5}{-(x-3)}$$

$$=\frac{x+4}{x-3}-\frac{4x-5}{x-3}$$ LCD $=x-3$

$$=\frac{x+4-4x+5}{x-3}$$

$$=\frac{-3x+9}{x-3}$$

$$=\frac{-3\cancel{(x-3)}}{\cancel{x-3}}$$

$$=-3\quad , x\neq 3$$

d) $\dfrac{2-5x}{x^2-4x+4}-\dfrac{6x^2-13x-5}{2x^2-9x+10}$

$$=\frac{2-5x}{(x-2)^2}-\frac{(3x+1)\cancel{(2x-5)}}{(x-2)\cancel{(2x-5)}}$$

$$=\frac{2-5x}{(x-2)^2}-\frac{3x+1}{x-2}$$ LCD $=(x-2)(x-2)$

$$=\frac{2-5x-(3x+1)(x-2)}{(x-2)^2}$$

$$=\frac{2-5x-(3x^2-5x-2)}{(x-2)^2}$$

$$=\frac{2-5x-3x^2+5x+2}{(x-2)^2}$$

$$=\frac{-3x^2}{(x-2)^2}\quad , x\neq 2,\frac{5}{2}$$

Ex. 2. Simplify and state any restrictions on the variables.

a) $\dfrac{x+1}{x^2+2x-3}-\dfrac{x+2}{x^2+4x-5}$

$=\dfrac{x+1}{(x+3)(x-1)}-\dfrac{x+2}{(x+5)(x-1)}$ LCD $=(x+5)(x+3)(x-1)$

$=\dfrac{(x+1)(x+5)-(x+2)(x+3)}{(x+5)(x+3)(x-1)}$

$=\dfrac{(x^2+6x+5)-(x^2+5x+6)}{(x+5)(x+3)(x-1)}$

$=\dfrac{x^2+6x+5-x^2-5x-6}{(x+5)(x+3)(x-1)}$

$=\dfrac{\cancel{x-1}^{\,1}}{(x+5)(x+3)\cancel{(x-1)}_{\,1}}$

$=\dfrac{1}{(x+5)(x+3)}$, $x\neq -5, -3, 1$

b) $\dfrac{\left[\dfrac{1}{4+m}-\dfrac{1}{4}\right]}{m}$

$=\dfrac{\left[\dfrac{4(1)-1(4+m)}{4(4+m)}\right]}{\left(\dfrac{m}{1}\right)}$

$=\dfrac{4-4-m}{4(4+m)}\div\dfrac{m}{1}$

$=\dfrac{\cancel{-m}^{\,-1}}{4(4+m)}\cdot\dfrac{1}{\cancel{m}_{\,1}}$

$=-\dfrac{1}{4(4+m)}$, $m\neq -4, 0$

c) $\dfrac{21}{x^2+7x+10}-\dfrac{x^2+x-12}{x^2-2x-24}\div\dfrac{x^2+2x-15}{x^2-8x+12}$

$=\dfrac{21}{(x+5)(x+2)}-\dfrac{\cancel{(x+4)}^{1}\cancel{(x-3)}^{1}}{\cancel{(x-6)}_{1}\cancel{(x+4)}_{1}}\cdot\dfrac{\cancel{(x-6)}^{1}(x-2)}{(x+5)\cancel{(x-3)}_{1}}$

$=\dfrac{21}{(x+5)(x+2)}-\dfrac{x-2}{x+5}$ LCD $=(x+5)(x+2)$

$=\dfrac{21-(x-2)(x+2)}{(x+5)(x+2)}$

$=\dfrac{21-(x^2-4)}{(x+5)(x+2)}$

$=\dfrac{21-x^2+4}{(x+5)(x+2)}$

$=\dfrac{25-x^2}{(x+5)(x+2)}$

$=\dfrac{(5-x)\cancel{(5+x)}^{1}}{\cancel{(x+5)}_{1}(x+2)}$

$=\dfrac{5-x}{x+2}$, $x\neq -5, -4, -3, 2, 3, 6$

HW. Exercise 1.7

Date:____________ **1.8 Working With Radicals, I**

Rules: *When* ***multiplying*** *radicals,* $\sqrt{a}\times\sqrt{b}=\sqrt{ab}$. *When* ***dividing*** *radicals,* $\dfrac{\sqrt{a}}{\sqrt{b}}=\sqrt{\dfrac{a}{b}}$.

Recall: $\sqrt{0}=0$, $\sqrt{1}=1$, $\sqrt{4}=2$, $\sqrt{9}=3$, $\sqrt{16}=4$, $\sqrt{25}=5$, $\sqrt{36}=6$, $\sqrt{49}=7$, $\sqrt{64}=8$, $\sqrt{81}=9$, $\sqrt{100}=10$, $\sqrt{121}=11$, $\sqrt{144}=12$

A. Changing Entire Radicals to Mixed Radicals

1. Simplify.

a) $\sqrt{50}$
$=\sqrt{25\times2}$
$=\sqrt{25}\sqrt{2}$
$=5\sqrt{2}$

b) $\sqrt{20}$
$=\sqrt{4\times5}$
$=\sqrt{4}\sqrt{5}$
$=2\sqrt{5}$

c) $\sqrt{54}$
$=\sqrt{9\times6}$
$=\sqrt{9}\sqrt{6}$
$=3\sqrt{6}$

d) $\sqrt{48}$
$=\sqrt{16\times3}$
$=\sqrt{16}\sqrt{3}$
$=4\sqrt{3}$

B. Dividing Radicals

2. Simplify.

a) $\dfrac{\sqrt{48}}{\sqrt{6}}$
$=\sqrt{\dfrac{48}{6}}$
$=\sqrt{8}$
$=2\sqrt{2}$

b) $\dfrac{\sqrt{225}}{\sqrt{3}}$
$=\sqrt{\dfrac{225}{3}}$
$=\sqrt{75}$
$=5\sqrt{3}$

c) $\dfrac{2\sqrt{5}}{\sqrt{180}}$
$=\dfrac{2\sqrt{5}}{6\sqrt{5}}$
$=\dfrac{2}{6}$
$=\dfrac{1}{3}$

$$\begin{array}{r} 36 \\ 5\,)\overline{180} \\ -15 \\ \hline 30 \\ -30 \\ \hline 0 \end{array}$$

d) $\dfrac{-10\sqrt{216}}{2\sqrt{3}}$
$=-5\sqrt{72}$
$=-5\sqrt{36}\sqrt{2}$
$=-5(6)\sqrt{2}$
$=-30\sqrt{2}$

C. Multiplying Radicals

3. Simplify.

a) $2\sqrt{3}\times5\sqrt{6}$
$=2\times5\times\sqrt{3}\times\sqrt{6}$
$=10\sqrt{18}$
$=10\sqrt{9}\sqrt{2}$
$=30\sqrt{2}$

b) $9\sqrt{2}\times4\sqrt{14}$
$=36\sqrt{28}$
$=36(2)\sqrt{7}$
$=72\sqrt{7}$

c) $3\sqrt{7}\times5\sqrt{7}$
$=15\sqrt{49}$
$=15(7)$
$=105$

D. Simplifying Radical Expressions

4. Simplify.

a) $\dfrac{21-14\sqrt{6}}{7}$
$=\dfrac{\cancel{7}^{1}(3-2\sqrt{6})}{\cancel{7}_{1}}$
$=3-2\sqrt{6}$

b) $\dfrac{6-\sqrt{45}}{-3}$
$=\dfrac{6-3\sqrt{5}}{-3}$
$=\dfrac{\cancel{3}^{-1}(2-\sqrt{5})}{\cancel{-3}_{1}}$
$=-2+\sqrt{5}$

c) $\dfrac{-15+2\sqrt{125}}{10}$
$=\dfrac{-15+2(5\sqrt{5})}{10}$
$=\dfrac{-15+10\sqrt{5}}{10}$
$=\dfrac{\cancel{5}^{1}(-3+2\sqrt{5})}{\cancel{10}\,2}$
$=\dfrac{-3+2\sqrt{5}}{2}$

HW. Exercise 1.8

Date:______________ **1.9 Working With Radicals, II**

A. Adding and Subtracting Radicals

1. Simplify (ie. add and subtract *like* radicals).

a) $\sqrt{24}-\sqrt{54}+\sqrt{150}$

$= 2\sqrt{6} - 3\sqrt{6} + 5\sqrt{6}$

$= 4\sqrt{6}$

b) $3\sqrt{48}-\frac{1}{2}\sqrt{8}+2\sqrt{27}-\frac{4}{3}\sqrt{72}$

$= 3(4\sqrt{3}) - \frac{1}{\cancel{2}_1}(\cancel{2}^1\sqrt{2}) + 2(3\sqrt{3}) - \frac{4}{\cancel{3}_1}(\cancel{6}^2\sqrt{2})$

$= 12\sqrt{3} - \sqrt{2} + 6\sqrt{3} - 8\sqrt{2}$

$= 18\sqrt{3} - 9\sqrt{2}$

B. Multiplying Radicals

2. Simplify (ie. expand first and then simplify.)

a) $2\sqrt{2}\left(\sqrt{10}-3\sqrt{14}\right)$

$= 2\sqrt{20} - 6\sqrt{28}$

$= 2(2\sqrt{5}) - 6(2\sqrt{7})$

$= 4\sqrt{5} - 12\sqrt{7}$

b) $\left(2\sqrt{3}+\sqrt{5}\right)\left(\sqrt{3}-4\sqrt{5}\right)$

$= 2\sqrt{9} - 8\sqrt{15} + \sqrt{15} - 4\sqrt{25}$

$= 2(3) - 7\sqrt{15} - 4(5)$

$= 6 - 20 - 7\sqrt{15}$

$= -14 - 7\sqrt{15}$

C. Dividing Radicals

3. Simplify (ie. ***rationalize*** the denominator).

a) $\frac{5}{\sqrt{6}} \cdot \frac{\sqrt{6}}{\sqrt{6}}$

$= \frac{5\sqrt{6}}{\sqrt{36}}$

$= \frac{5\sqrt{6}}{6}$

b) $\frac{\sqrt{5}}{\sqrt{40}}$

$= \frac{1}{\sqrt{8}}$

$= \frac{1}{2\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}}$

$= \frac{\sqrt{2}}{2\sqrt{4}}$

$= \frac{\sqrt{2}}{4}$

Recall: $(a-b)(a+b) = a^2 - b^2$

c) $\frac{3}{2\sqrt{6}-\sqrt{3}} \cdot \frac{2\sqrt{6}+\sqrt{3}}{2\sqrt{6}+\sqrt{3}}$

$= \frac{6\sqrt{6}+3\sqrt{3}}{4\sqrt{36}-\sqrt{9}}$

$= \frac{6\sqrt{6}+3\sqrt{3}}{4(6)-3}$

$= \frac{6\sqrt{6}+3\sqrt{3}}{21}$

$= \frac{\cancel{3}^1(2\sqrt{6}+\sqrt{3})}{\cancel{21}7}$

$= \frac{2\sqrt{6}+\sqrt{3}}{7}$

d) $\frac{2\sqrt{7}-\sqrt{3}}{2\sqrt{3}+3\sqrt{7}} \cdot \frac{2\sqrt{3}-3\sqrt{7}}{2\sqrt{3}-3\sqrt{7}}$

$= \frac{4\sqrt{21} - 6\sqrt{49} - 2\sqrt{9} + 3\sqrt{21}}{4\sqrt{9} - 9\sqrt{49}}$

$= \frac{7\sqrt{21} - 6(7) - 2(3)}{4(3) - 9(7)}$

$= \frac{7\sqrt{21} - 48}{-51}$

$= \frac{-7\sqrt{21} + 48}{51}$

HW. Exercise 1.9

Date:______________

1.10 Working With Complex Numbers

Definition: ***Complex Numbers**, **C**, are of the form **a** + **bi**, where **a** and **b** are real numbers and **i**, the imaginary unit is equal to $\sqrt{-1}$, ie. $i=\sqrt{-1}$ and $i^2=-1$.*

Complex Numbers
$a+bi$, where a and b are real numbers and $i=\sqrt{-1}$.

$b=0$ → **Real Numbers** $\left(\text{e.g., } 5, \sqrt{2}, -7, 3.6, \frac{-2}{3}\right)$

- **Rational Numbers**
  Can be expressed as the ratio of two integers.
  $\left(\text{e.g., } 3, -\sqrt{4}, 0.\overline{27}, -\frac{6}{7}\right)$
  - **Integers**
    Whole numbers and their opposites
    (e.g., 4, −4, 0, 9, −9)
    - **Whole Numbers**
      Positive integers and zero
      (e.g., 0, 3, 7, 11)
      - **Natural Numbers**
        Positive integers
        (e.g., 1, 5, 8, 23)
- **Irrational Numbers**
  Cannot be expressed as the ratio of two integers.
  $(\text{e.g., } \sqrt{7}, -\sqrt{2}, \pi)$

$a, b \neq 0$ → **Imaginary Numbers** (e.g., $4+3i$, $3-2i$)

- $a=0$ → **Pure Imaginary Numbers** (e.g., $7i$, $-3i$, $i\sqrt{2}$)

A. Simplifying Complex Numbers

1. Simplify.

a) $\sqrt{-25}$

$=\sqrt{25}\sqrt{-1}$
$=5i$

b) $\sqrt{-48}$

$=\sqrt{16}\sqrt{-1}\sqrt{3}$
$=4i\sqrt{3}$

c) $\sqrt{-125}$

$=\sqrt{25}\sqrt{-1}\sqrt{5}$
$=5i\sqrt{5}$

d) $-\sqrt{-4}$

$=-\sqrt{4}\sqrt{-1}$
$=-2i$

e) $3-\sqrt{-28}$

$=3-2i\sqrt{7}$

f) $\dfrac{-21+\sqrt{-98}}{7}$

$=\dfrac{-21+7i\sqrt{2}}{7}$

$=\dfrac{\cancel{7}^{1}(-3+i\sqrt{2})}{\cancel{7}_{1}}$

$=-3+i\sqrt{2}$

g) $\dfrac{-12+\sqrt{-9}}{-6}$

$=\dfrac{-12+3i}{-6}$

$=\dfrac{\cancel{-3}^{1}(4-i)}{\cancel{-6}\,2}$

$=\dfrac{4-i}{2}$

B. Adding and Subtracting Complex Numbers

2. Simplify.

a) $(6-4i)+(-2+3i)$

$= 6-2-4i+3i$

$= 4-i$

b) $(-4-5i)-(3-2i)$

$= -4-3-5i+2i$

$= -7-3i$

C. Multiplying Complex Numbers Recall: If $i=\sqrt{-1}$ then $i^2=-1$

3. Simplify.

a) $3i\times 6i$

$= 18i^2$

$= 18(-1)$

$= -18$

b) $(2i)(-5i)(3i)$

$= -30i^3$

$= -30i^2\cdot i$

$= -30(-1)i$

$= 30i$

c) $\left(-3i\sqrt{2}\right)^2$

$= 9i^2(2)$

$= 18i^2$

$= 18(-1)$

$= -18$

d) $3i(2+4i)$

$= 6i+12i^2$

$= 6i+12(-1)$

$= -12+6i$

e) $(1-4i)(3+2i)$

$= 3+2i-12i-8i^2$

$= 3-10i-8(-1)$

$= 3+8-10i$

$= 11-10i$

f) $(3-5i)^2$

$= (3-5i)(3-5i)$

$= 9-15i-15i+25i^2$

$= 9-30i+25(-1)$

$= 9-25-30i$

$= -16-30i$

D. Dividing Complex Numbers

4. Simplify by ***rationalizing*** the denominators.

a) $\dfrac{5}{2i}\cdot\dfrac{i}{i}$

$= \dfrac{5i}{2i^2}$

$= \dfrac{5i}{2(-1)}$

$= -\dfrac{5i}{2}$

b) $\dfrac{3i}{-3+i}$

$= \dfrac{3i}{i-3}\cdot\dfrac{i+3}{i+3}$

$= \dfrac{3i^2+9i}{i^2-3^2}$

$= \dfrac{3(-1)+9i}{(-1)-9}$

$= \dfrac{-3+9i}{-10}$

$= \dfrac{3-9i}{10}$

c) $\dfrac{2+3i}{1-2i}\cdot\dfrac{1+2i}{1+2i}$

$= \dfrac{2+2i+3i+6i^2}{1-4i^2}$

$= \dfrac{2+5i+6(-1)}{1-4(-1)}$

$= \dfrac{2-6+5i}{1+4}$

$= \dfrac{-4+5i}{5}$

HW. Exercise 1.10
Unit 1 Part II Test covers Days 5 to 10
HW. Part II Review 1.5 to 1.10