

1. (4pts) Write two examples of each kind of number:

natural

1, 3

integer

-4, 7

rational

$\frac{3}{2}$, $-\frac{7}{4}$

irrational

$\sqrt{7}$, π

2. (12pts) Simplify:

$$a) 3 - \left(4 \cdot 2 + 4 \cdot \frac{2}{3}\right) = 3 - \left(8 + \frac{8}{3}\right) = 3 - \left(\frac{24+8}{3}\right) = 3 - \frac{32}{3} = \frac{9-32}{3} = -\frac{23}{3}$$

$$b) \frac{3}{20} - \frac{7}{15} = \frac{9-28}{60} = -\frac{19}{60}$$

$$c) \frac{\frac{3}{14}}{\frac{18}{7}} = \frac{\cancel{3}^1}{\cancel{14}_2} \cdot \frac{\cancel{7}^1}{\cancel{18}_6} = \frac{1}{12}$$

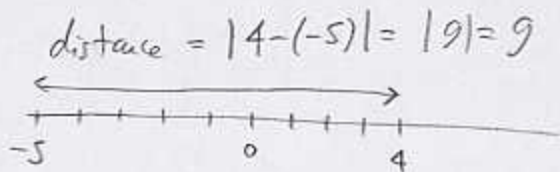
$$d) (-4)^3 = -64$$

$$e) -2^{-4} = -\frac{1}{2^4} = -\frac{1}{16}$$

$$f) \sqrt{(-5)^2} = |-5| = 5$$

$$\text{or } = \sqrt{25} = 5$$

3. (2pts) Draw the numbers -5 and 4 on the number line and find the distance between them.



4. (8pts) Simplify and write the answer so all exponents are positive:

$$a) \frac{(2x)^2(x^3y)^4}{x^5(4y)^3} = \frac{4x^2 \cdot x^{12} y^4}{x^5 \cdot 64 y^3} = \frac{x^{14-5} y^{4-3}}{16} = \frac{x^9 y}{16}$$

$$b) \frac{3x^{-3}(5y)^2}{(5x^{-2}y^3)^4} = \frac{3x^{-3} \cdot 25y^2}{625x^{-8}y^{12}} = \frac{3x^{-3-(-8)} y^{2-12}}{25} = \frac{3x^5 y^{-10}}{25} = \frac{3x^5}{25y^{10}}$$

5. (2pts) Convert to scientific notation:

$$34745 = 3.4745 \times 10^4 \qquad 0.000000893 = 8.93 \times 10^{-7}$$

6. (2pts) Convert to a decimal number:

$$3.486 \times 10^7 = 34,860,000 \qquad 2.5417 \times 10^{-3} = 0.0025417$$

$\underbrace{\hspace{10em}}_{7 \text{ places}}$
 $\underbrace{\hspace{10em}}_{3 \text{ places}}$