Bell Work

Factor:

1. $64 - x^3$

$(4-x)(16+4x+x^2)$

2. $9 - 4x^2$

$(3+2x)(3-2x)$

3. $x^3 - 3x^2 + x - 3$

$x^2(x-3)+1(x-3)$

$(x-3)(x^2)$

$(x-3)(x^2+1)$

24) $y = x - 3$

$-2y - 3x = -4$

$(2, -1)$

$-2(x-3) - 3x = -4$

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

$-5x + 6 = -4$

$\quad -6 \quad -6$

$-5x = -10$

$x = 2$

$(3, 1)$

23) $x^2 + y^2 = 10$

$y = -3x + 10$

$x^2 + (-3x+10)^2 = 10$

$x^2 + (-3x+10)(-3x+10) = 10$

$x^2 + 9x^2 - 30x - 30x + 100 = 10$

$10x^2 - 60x + 90 = 0$

$10(x^2 - 6x + 9) = 0$

$10(x-3)(x-3) = 0$

$x = 3$

$$\frac{ac}{bc} = \frac{a}{b} \qquad \frac{a+c}{b+c} \neq \frac{a}{b}$$

In order to reduce, everything has to be in factored form.

$$\frac{x+1}{x+2}$$

$$\frac{3\cancel{x}}{4\cancel{x}} = \frac{3}{4}$$

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

**Recognize factors that reduce to 1 or -1

$$\frac{-7\cancel{x}}{7\cancel{x}} = -1 \qquad \frac{\cancel{(x+2)}}{-\cancel{(x+2)}} = \frac{1}{-1} \qquad \frac{\cancel{(x+4)}}{-x-4} = \frac{1}{-1} \qquad \frac{x-5}{5-x} = \frac{1}{-1} = -1$$

-1

$-1(\cancel{x+4})$

-1

$-x+5$

$-1(x-\cancel{5})$

Make a decision as to whether the expressions equal 1 , -1 or neither.

$\frac{x-1}{1-x}$ -1	$\frac{x+2}{2+x}$ 1	$\frac{x-3}{x+3}$ N	$\frac{x^2-1}{1-x^2}$ -1
$\frac{(x+3)^2}{x^2+6x+9}$ 1 $(x+3)(x+3)$	$\frac{3(x+4)}{(x+4)(3)}$ 1	$\frac{y^2-1}{y^2+1}$ N	$\frac{-x-3}{x+3}$ -1
$\frac{-x+3}{3-x}$ 1	$\frac{y^2+1}{1+y^2}$ 1	$\frac{x^2+2x-1}{x^2+2x+1}$ N	$\frac{x^2-2x-3}{3+2x-x^2}$ -1
$\frac{a-b}{-a+b}$ -1	$\frac{x^2+3x+1}{3x+1+x^2}$ 1	$\frac{5-x}{5-x}$ 1	x^2+6x+9 $\frac{(x+3)^2}{x^2+9}$ N

Circle the expressions that are the same and place an x over the "oddball" expression in each row.

1.	$\cancel{\frac{-4}{-x}}$	$\frac{-4}{x}$	$\frac{4}{-x}$	$-\frac{4}{x}$
2.	$-\frac{x+3}{x-4}$ $\frac{-x-3}{x-4}$	$\frac{-x-3}{x-4}$	$\cancel{\frac{-x-3}{-x+4}}$ $\frac{-x-3}{-1(x-4)}$	$\frac{x+3}{4-x}$ $\frac{x+3}{-1(x-4)}$
3.	$\frac{x-5}{5-x}$	$\cancel{\frac{x-5}{x-5}}$	$-\frac{x-5}{x-5}$	$\frac{x-5}{-x+5}$
4.	$\cancel{-\frac{-x-4}{-x-4}}$	$\frac{x+4}{x+4}$	$\frac{x+4}{4+x}$	$-\frac{-x-4}{x+4}$
5.	$-\frac{x+1}{1-x}$ $\frac{x+1}{-1+x}$	$\frac{1+x}{x-1}$	$\frac{x+1}{x-1}$	$\cancel{\frac{1+x}{1-x}}$
6.	$\frac{x-4}{(x+1)(x+3)}$	$\frac{x-4}{x^2+4x+3}$	$\cancel{\frac{4-x}{x^2+4x+3}}$	$-\frac{-4+x}{x^2+4x+3}$

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

Simplify:

1. $$\frac{\cancel{8}x^3\cancel{y}}{\cancel{2}\cancel{x}\cancel{y^2}} \cdot \frac{7\overset{x^3}{\cancel{x^4}}\overset{y}{\cancel{y^3}}}{\cancel{4}\cancel{y}} = 7x^6y$$

2. $$\frac{x^2 + 5x + 6}{x^2 + 3x} = \frac{(x+2)\cancel{(x+3)}}{x\cancel{(x+3)}} = \frac{x+2}{x}$$

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

4. $$\frac{x^2 - 2x - 15}{9 - x^2} = \frac{(x-5)\cancel{(x+3)}}{(3-x)\cancel{(3+x)}}$$

$$\frac{x-5}{3-x}$$

5. $$\frac{4 - x}{x^2 - 16}$$

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

6. Multiply $\dfrac{3x - 3x^2}{x^2 + 4x - 5} \cdot \dfrac{x^2 + x - 20}{3x}$

$$\frac{3\cancel{x}(1-x)}{\cancel{(x+5)}(x-1)} \cdot \frac{\cancel{(x+5)}(x-4)}{\cancel{3x}}$$

$$-1(x-4)$$

7. $$\frac{x^2 + 4x + 3}{x^2 + 5x + 6} \cdot \frac{x^2 - 3x - 10}{x^2 + x}$$

$(x+1)(x+3)$ $(x+2)(x-5)$

$(x+2)(x+3)$ $x(x+1)$

$$\frac{\cancel{x+1}}{\cancel{x+2}} \cdot \frac{\cancel{(x+2)}(x-5)}{x\cancel{(x+1)}}$$

$$\boxed{\frac{x-5}{x}}$$

8. Divide $\dfrac{7x}{2x - 10} \div \dfrac{x^2 - 6x}{x^2 - 11x + 30}$

multiply by reciprocal

$$\frac{7\cancel{x}}{2x-10} \cdot \frac{\cancel{(x-6)}\cancel{(x-5)}}{x^2-11x+30}$$

$$2\cancel{(x-5)} \qquad \frac{x^2-6x}{\cancel{x}\cancel{(x-6)}}$$

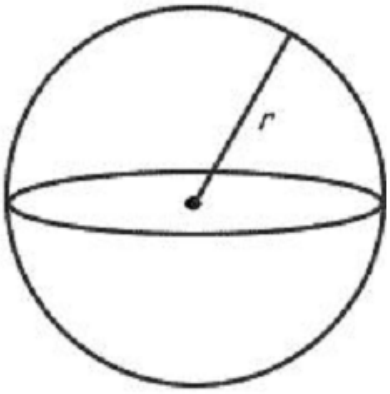
$$\boxed{\frac{7}{2}}$$

9. $$\frac{9x^2}{3 - 6x} \div \frac{3x^2 - 12x}{2x^2 - x}$$

$$\frac{\cancel{9}x^2}{3-6x} \cdot \frac{\cancel{x}(\cancel{2x-1})}{3x^2-12x} \quad -1$$

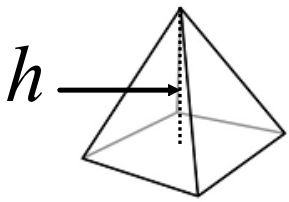
$$\cancel{3}(\cancel{1-2x}) \quad \cancel{3x}(x-4)$$

$$= \frac{-x^2}{x-4}$$



Sphere:

$$v = \frac{4}{3}\pi r^3$$



Pyramid:

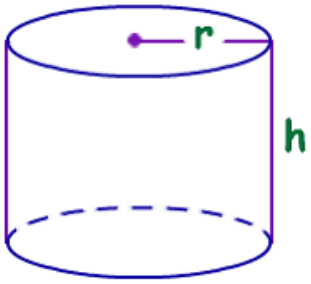
$$v = \frac{1}{3}Bh$$

Base
(length times width)

Cylinder:

$$v = Bh$$

circle πr^2

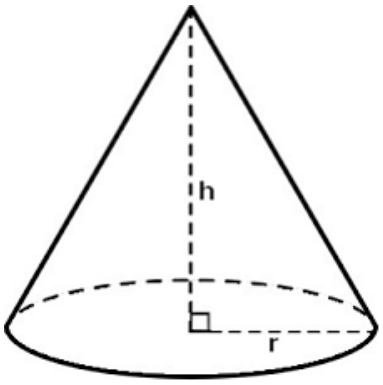


$A_{circle} = \pi r^2$

$C_{circumference}$ (perimeter) $= 2\pi r$ or πd

Cone:

$$v = \frac{1}{3}Bh$$

circle

πr^2