

## Worksheet 42 - Rational &amp; Prime Numbers

- 1) Use an infinite geometric series to show that  $5.013013013\dots$  is a rational number by writing it as a ratio of two integers.
- 2) Use an infinite geometric series to show that  $-0.001700170017\dots$  is a rational number by writing it as a ratio of two integers.

3) Prove that  $0.499999\dots = \frac{1}{2}$ .

- 4) Are 136 and 81 relatively prime? If not, state their common factors.

- 5) Are 152 and 285 relatively prime? If not, state their common factors.

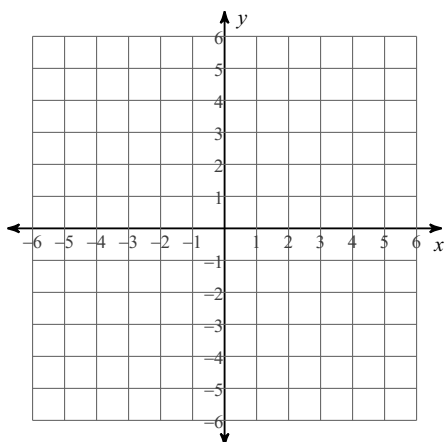
**Simplify. Write "undefined" for expressions that are undefined.**

6) 
$$\begin{bmatrix} 1 & 3 \\ 1 & 4 \\ -5 & -4 \end{bmatrix} \cdot \begin{bmatrix} -4 & -1 \\ 5 & -6 \\ 1 & -1 \\ -4 & 5 \end{bmatrix}$$

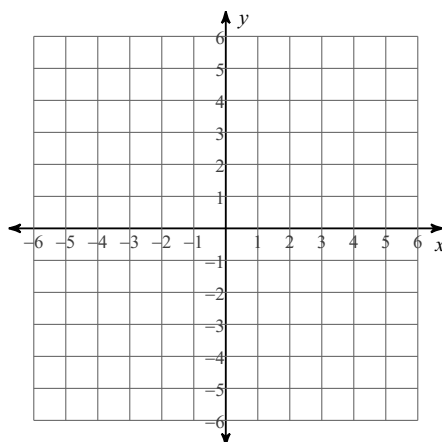
7) 
$$\begin{bmatrix} 0 & 4 & 5 \\ 3 & -1 & -6 \\ -6 & -2 & 0 \end{bmatrix} \cdot \begin{bmatrix} 4 & 3 & 5 \\ -3 & 1 & -1 \\ 5 & -6 & -6 \end{bmatrix}$$

Graph each equation.

8)  $y = |x + 3| + 3$

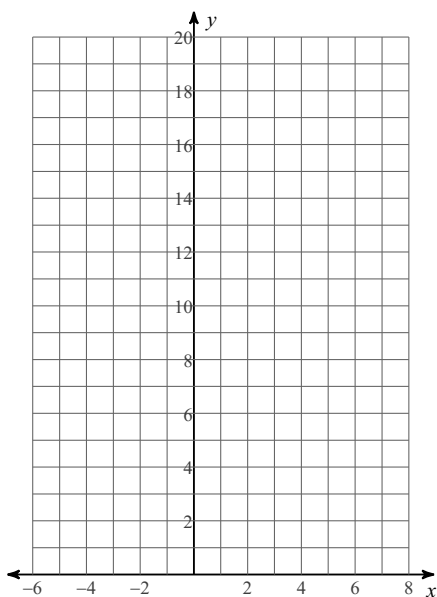


9)  $y = |x - 1| - 2$

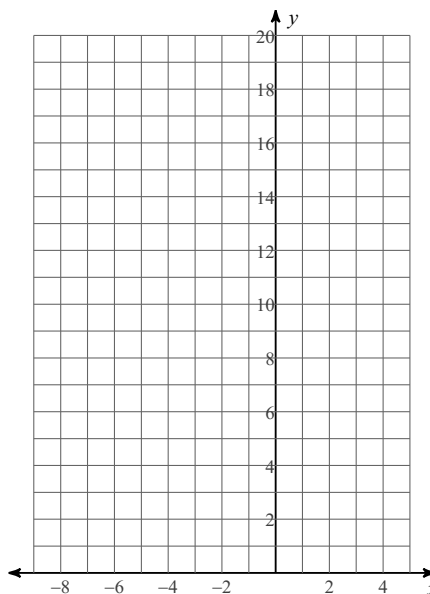


Sketch the graph of each function.

10)  $f(x) = 2 \cdot \left(\frac{1}{3}\right)^{x-1}$



11)  $f(x) = 3 \cdot 2^{x+2}$



Solve each equation for  $0 \leq \theta < 2\pi$ .

12)  $1 = -5 - 3\csc -2\theta$

13)  $5 + \sec\left(\theta + \frac{\pi}{2}\right) = \frac{15 - 2\sqrt{3}}{3}$