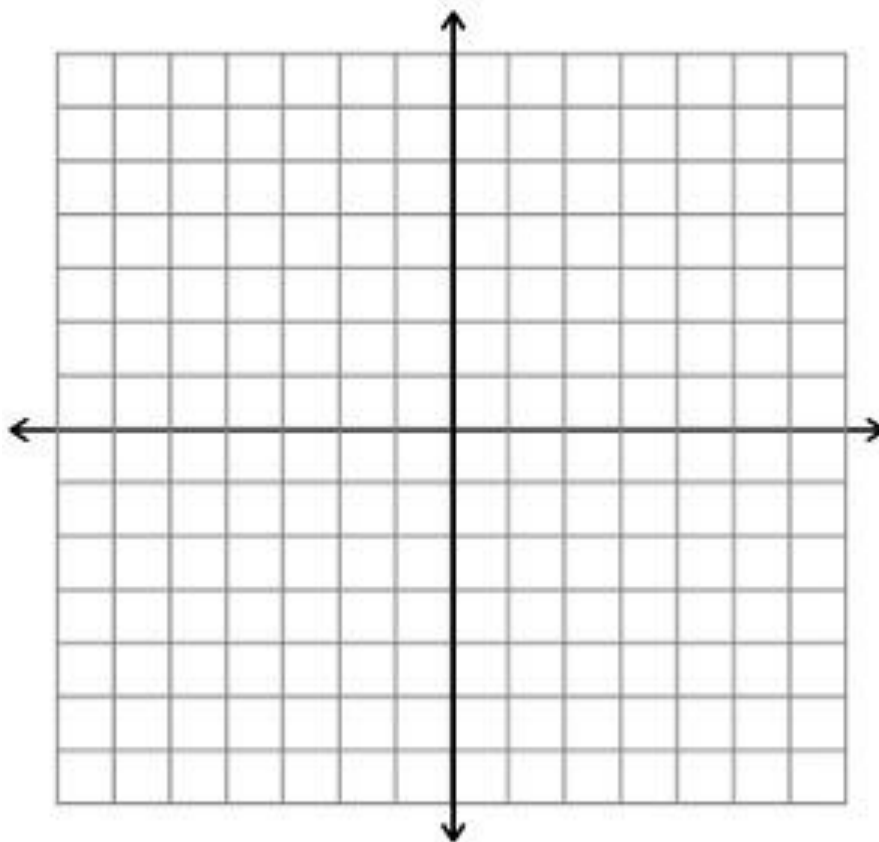**Investigation:** Graph & color code each graph.

■ 1. Graph the **Parent Function:** y = _____

☐ 2. Graph: $y = \dfrac{1}{x-3}$ How did this affect the parent graph?

☐ 3. Graph: $y = \dfrac{1}{x+2}$ How did this affect the parent graph?

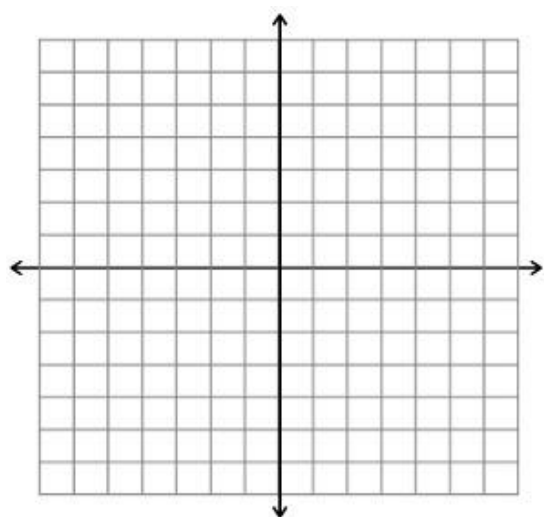☐ 4. Graph: $y = \dfrac{1}{x} + 5$ How did this affect the parent graph?

☐ 5. Graph: $y = \dfrac{1}{x} - 4$ How did this affect the parent graph?

Vocabulary:

1. Asymptotes -

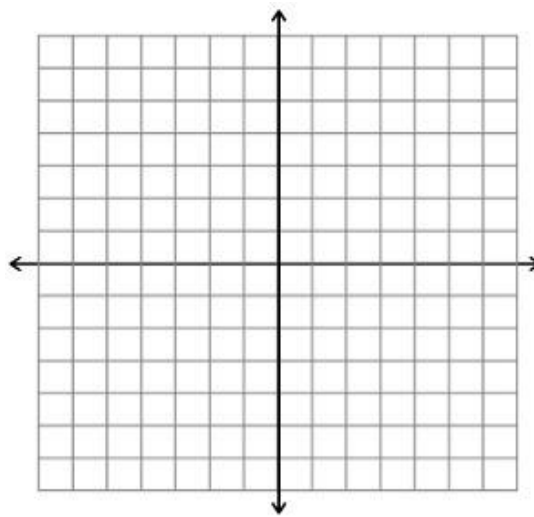2. Horizontal Asymptotes -

3. Holes -

$$f(x) = \frac{1}{x}$$

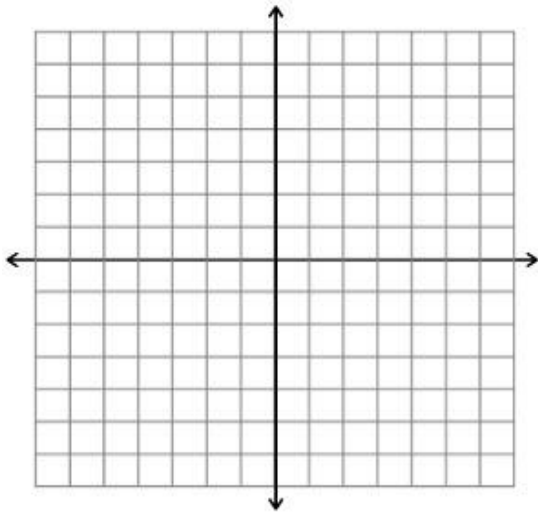$$f(x) = \frac{3x - 1}{x - 2}$$

VA:

HA:

Hole:

X-int:

Y-int:

D:

R:

VA:

HA:

Hole:

X-int:

Y-int:

D:

R:

$$y = \frac{x^2 - 9}{x - 3}$$

$$y = \frac{2x^2 - 3x + 1}{x - 2}$$

VA:

HA:

Hole:

X-int:

Y-int:

D:

R:
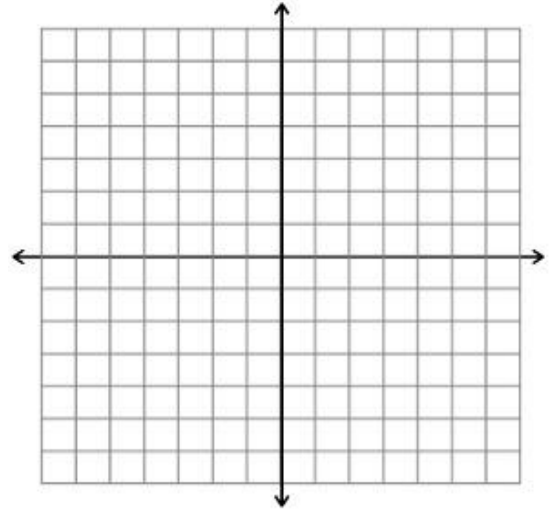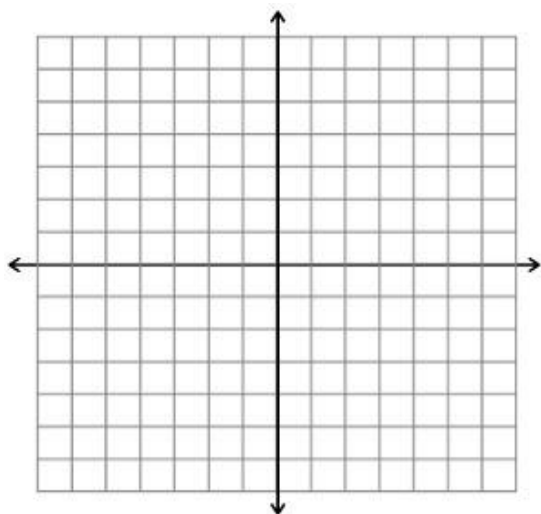
VA:

HA:

Hole:

X-int:

Y-int:

D:

R:

$$f(x) = \frac{x^2 + 4x + 3}{x^3 + x^2 - 6x}$$

VA:

HA:

Hole:

X-int:

Y-int:

D:

R: