

Multiple Choice:

1.) Given $f(x) = x^2 - 3$, identify which point is on the graph of $y = \frac{1}{f(x)}$.

- a.) $(0, -3)$ b.) $(2, 1)$ c.) $(1, -2)$ d.) $(\sqrt{3}, 0)$

2.) If the graph of $y = \sqrt{x}$ is stretched horizontally by a factor of 3, identify the resulting function.

- a.) $y = \frac{1}{3}\sqrt{x}$ b.) $y = 3\sqrt{x}$ c.) $y = \sqrt{\frac{1}{3}x}$ d.) $y = \sqrt{3x}$

3.) Indicate which function has a horizontal asymptote at $y = \frac{1}{2}$.

- a.) $y = \frac{x-2}{x^2}$ b.) $y = \frac{x+2}{2x}$ c.) $y = \frac{x}{x+2}$ d.) $y = \frac{x^2}{x-2}$

4.) Given the graph of $f(x) = \sqrt{x}$, the function $g(x) = \sqrt{x} - 2$ can be described as:

- a.) a horizontal translation of $f(x)$ right 2 units
b.) a horizontal translation of $f(x)$ left 2 units
c.) a vertical translation of $f(x)$ down 2 units
d.) a vertical translation of $f(x)$ up 2 units

5.) If (a, b) is a point on the graph of $y = f(x)$, identify which of the following points is on the graph of $y = \frac{1}{2}f(x)$.

- a.) $\left(a, \frac{1}{2}b\right)$ b.) $\left(\frac{1}{2}a, b\right)$ c.) $(a, 2b)$ d.) $(2a, b)$

Short Answer:

(5)

1.) If the graph of $f(x) = \frac{1}{x+3}$ is reflected in the y -axis, state equation of the new graph, $g(x)$.

2.) If the graph of $f(x) = \sqrt{x}$, write the equation that horizontally shifts $f(x)$ right 5 units.

3.) State the non-permissible value(s) for $\frac{x-1}{x(x-3)} = 0$.

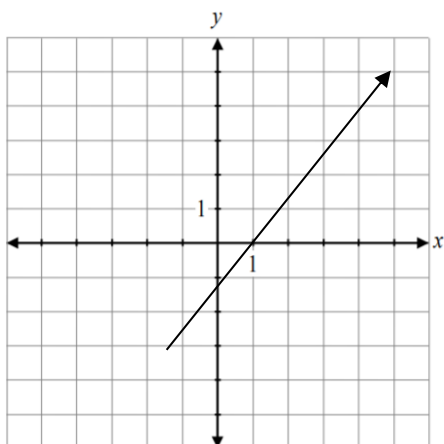
4.) State the roots of the equation, $(x+1)(x-2)(x-4) = 0$.

5.) If the point $(-2, 4)$ is on the graph of $f(x)$ state the coordinates of the point it will map onto on the graph of $y = f(2(x+1))$.

Long Answer: Show all work for full marks

1.) Given the graph of $y = f(x)$, sketch the graph of $y = \sqrt{f(x)}$.

(2)



2.) Explain how you can use transformations to identify the domain and range of the function

$$y = -2\sqrt{3(x-4)} + 9.$$

(2)

3.) Given the rational function $y = \frac{x-1}{x^2+1}$, determine:

(4)

a.) the x -intercept(s) of the graph.

b.) the y -intercept of the graph.

c.) the equations of any asymptotes.

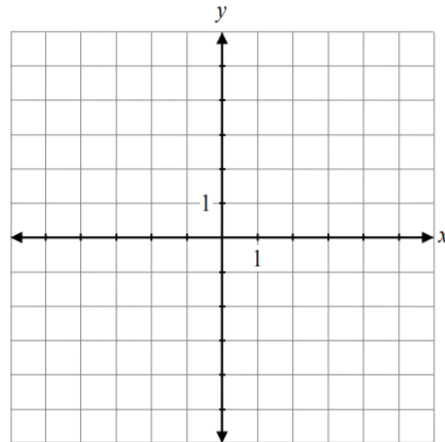
4.) Given the rational function $y = \frac{x-3}{x^2-9}$, determine the coordinates of the point of discontinuity.

(2)

- 5.) Sketch accurately, labeled graphs for each of the following.
State the Domain, Range, and any discontinuities.

(4)

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

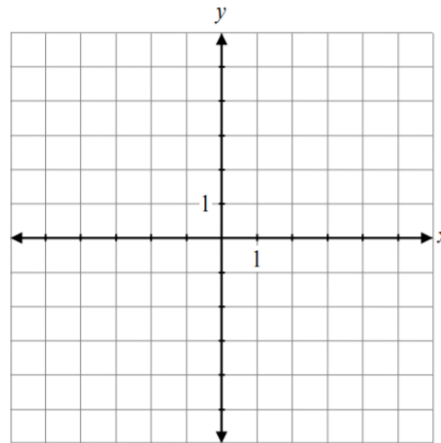


Domain: _____

Range: _____

(4)

b.) $f(x) = \frac{x^2}{x^2-9}$

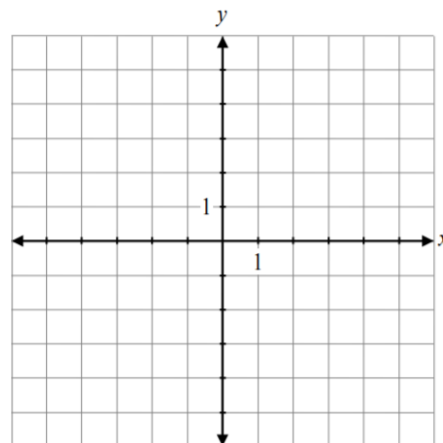


Domain: _____

Range: _____

(4)

c.) $f(x) = \frac{x-1}{x^2-1}$



Domain: _____

Range: _____