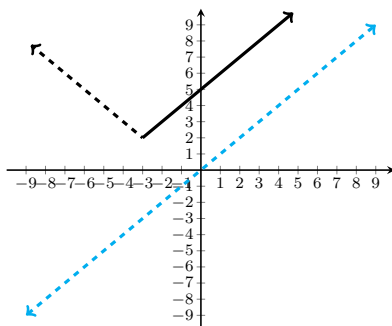


MATH 150 - WEEK-IN-REVIEW 6

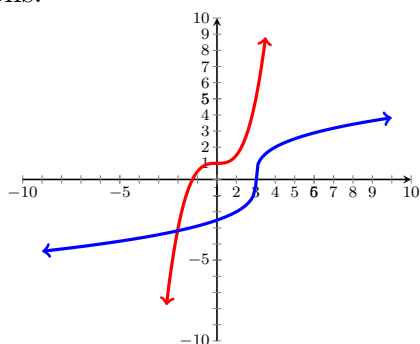
SANA KAZEMI

SECTIONS 5.1, 5.2 AND 5.3

1. Determine whether the function $h(x) = |x + 3| + 2$ where $x \geq -3$ has an inverse.



2. Graphically and algebraically verify whether $f(x) = 2\sqrt[3]{x - 2}$ and $g(x) = \frac{x^3 + 2}{2}$ are inverse functions.



3. Verify whether $f(x) = \frac{-3x + 4}{x - 2}$ and $g(x) = \frac{2x + 4}{x + 3}$ are inverse of each other.

4. If $f(x)$ is a one-to-one function with domain $(-\infty, 2) \cup (2, \infty)$, range $(-\infty, \infty)$, $f(1) = 5$ and $f(-2) = 8$. Assume $g(x)$ is inverse of this function. Evaluate its domain, range and $g(5) - g(8)$.

5. Simplify each of the following:

(a) $\log_8(0.25)$

(b) $11^{\log_{11}(5)} + 2$

(c) $\log(10^{-4})$

(d) $e^{\ln(\frac{1}{\pi})}$

(e) $\log_2(8) + \log_9(3)$

(f) $\ln\left(\frac{1}{e}\right)$

(g) $10^{\log(13)}$

6. Express the following equations in exponential form.

(a) $\log_6(z) = 1$

(b) $\log_7(3y) = 2$

(c) $\log(3) = 2t$

(d) $\ln(x - 1) = -1$

7. Express the following equations in logarithmic form.

(a) $7^3 = 343$

(b) $e^{0.5x} = t$

(c) $10^{-4x} = 0.1$



8. Find domain of the following.

(a) $\log_5(8 - 2x)$

(b) $\ln(x - x^2)$

(c) $e^{\sqrt{8x^2 - 2x - 3}}$

(d) $e^{\frac{2x - 7}{x + 1}}$

9. Determine the properties of the function $g(x) = -2e^{x-5} + 3$ and use the properties to graph the function.

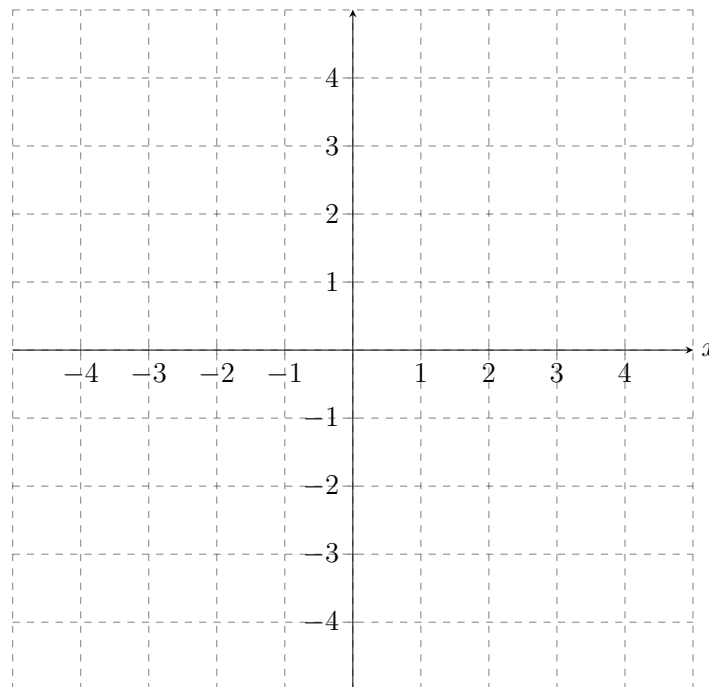
Domain: _____

x -intercept(s): _____

y -intercept(s): _____

Horizontal Asymptote(s): _____

Vertical Asymptote(s): _____

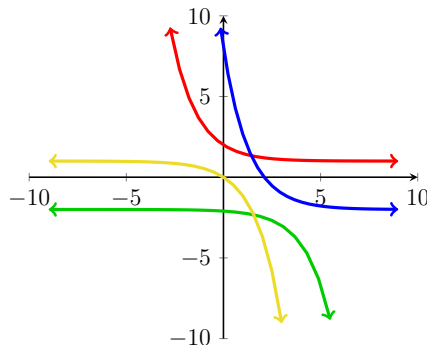


10. Determine the following for the function $g(x) = 3^{-0.7x} + 1$, then choose the graph that matches the function.

Domain:

Intercept(s):

Asymptote(s):



11. Determine the properties of the function $f(x) = -\log_2(2x - 5) + 3$ and use the properties to graph the function.

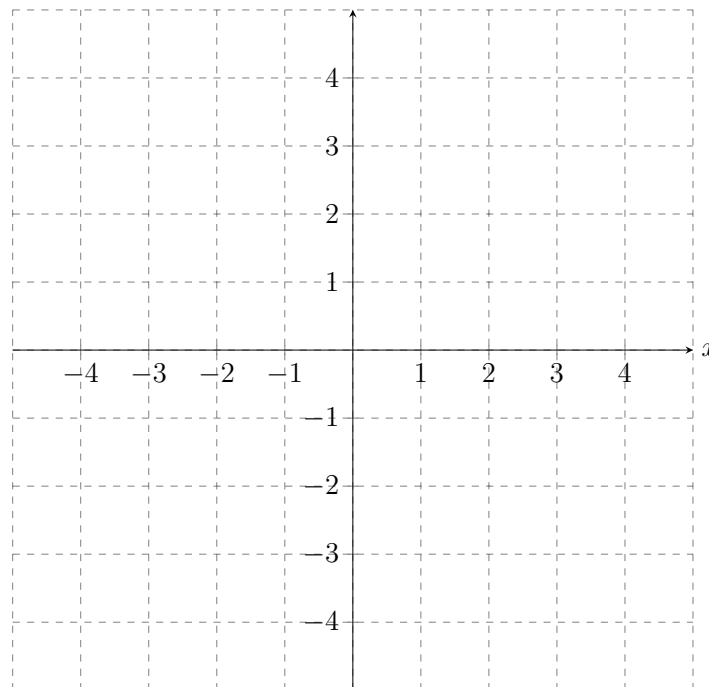
Domain: _____

x -intercept(s): _____

y -intercept(s): _____

Horizontal Asymptote(s): _____

Vertical Asymptote(s): _____



12. Determine the properties of the function $g(x) = 2 \ln(-x + 3)$ and use the properties to graph the function.

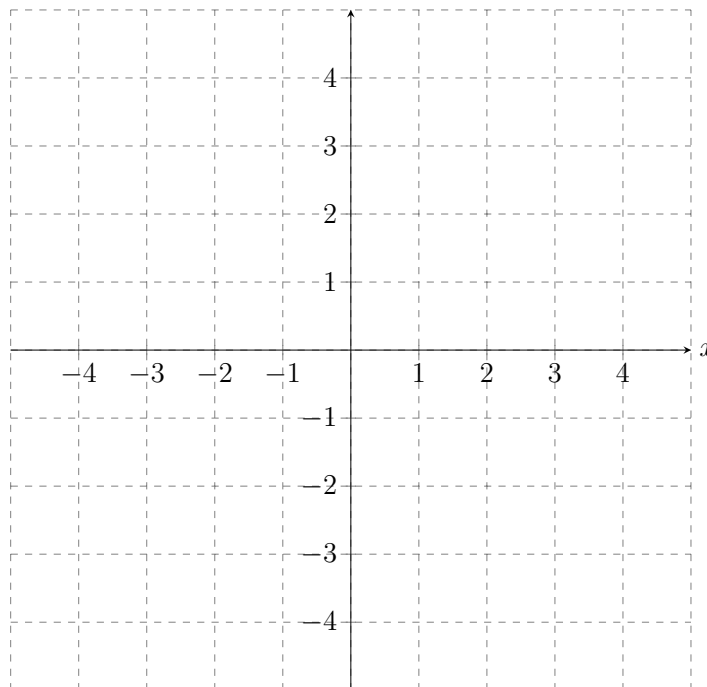
Domain: _____

x -intercept(s): _____

y -intercept(s): _____

Horizontal Asymptote(s): _____

Vertical Asymptote(s): _____



13. Use the laws of logarithms to expand each expression.

(a) $\ln \left(\frac{ab}{c\sqrt[3]{d}} \right)$

(b) $\log_5 \left(\frac{s^3\sqrt{t}}{(t^2+1)^4} \right)$

(c) $\log \left(\sqrt{x\sqrt{y\sqrt{z}}} \right)$