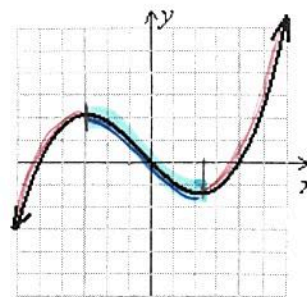


SHOW ALL WORK!



Use the graph to the right to answer questions 1-20:

| | | |
|---|---|---|
| 1. Find the domain of f . $(-\infty, \infty)$ | 2. Find the range of f . $(-\infty, \infty)$ | 3. Find the x -intercepts. $x = -5, 0, 4$ $(-5, 0) (0, 0) (4, 0)$ |
| 4. Find the y -intercept. $y = 0$ $(0, 0)$ | 5. Find the intervals over which f is increasing. $(-\infty, -3) \cup (2.5, \infty)$ | 6. Find the intervals over which f is decreasing. $(-3, 2.5)$ |
| 7. Find the intervals over which f is constant. None | 8. Find any points of discontinuity. None | |

9. Find the domain, x -intercepts, and y -intercept

$$f(x) = \frac{x^2 - 16}{x^2 + 9}$$

Domain: $x^2 + 9 \neq 0$
 $x^2 \neq -9$
 $x \neq \pm 3i$
 $D: (-\infty, \infty)$

x -intercepts: $0 = x^2 - 16$
 make $y=0$ $0 = (x+4)(x-4)$
 $x = \pm 4$

y -intercept: make $x=0$
 $f(0) = \frac{0^2 - 16}{0^2 + 9} = -\frac{16}{9}$

10. Find the domain, x -intercepts, and y -intercept

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

Domain: $x^2 - 4 \neq 0$
 $x^2 \neq 4$
 $x \neq \pm 2$
 $D: (-\infty, -2) \cup (-2, 2) \cup (2, \infty)$

x -intercepts: $0 = x + 3$
 make $y=0$ $-3 = x$

y -intercept: make $x=0$
 $f(0) = \frac{0+3}{0^2-4} = -\frac{3}{4}$

SHOW ALL WORK!

11. Given: $f(x) = \begin{cases} 7 & \text{if } x \leq -1 \leftarrow \\ x+1 & \text{if } -1 < x \leq 2 \\ -4 & \text{if } x > 2 \end{cases}$

Evaluate $f(-1)$.

$f(-1) = 7$

12. Given: $f(x) = \begin{cases} 7 & \text{if } x \leq -1 \\ x+1 & \text{if } -1 < x \leq 2 \leftarrow \\ -4 & \text{if } x > 2 \end{cases}$

Evaluate $f(2)$.

$f(2) = 2+1 = 3$

13. Graph

$f(x) = \begin{cases} 7 & \text{if } x \leq -1 \\ x+1 & \text{if } -1 < x \leq 2 \\ -4 & \text{if } x > 2 \end{cases}$

