Exam

Name_____

1) Let $y = 2x - 4$. Which one is **true ?** 1) _____

A) It is a line and parallel to $y = 3 - x$.
B) It is a line and x intercept is $(4, 0)$.
C) It is a line and y intercept is $(0, 2)$.
D) It is a line and perpendicular to $y = 1 - 2x$.
E) It is a line and passing through $(3, 2)$.

2) Let $0 < a < b$. Then **simplify** $|a| + |b - a| + |b|$? 2) _____

A) $2a$ B) $a - b$ C) 0 D) $2b$ E) $b - a$

3) Let $y = \frac{1}{x - 3}$. Which one is **false ?** 3) _____

A) it is neither odd nor even
B) It is a rational function
C) The domain is $(-\infty, 3) \cup (3, \infty)$
D) no y intercept
E) no x intercept

4) Find the equation of the line passing through $(3, -2)$ and has the slope $m = 3$? 4) _____

A) $y = -3x + \frac{2}{3}$.

B) $y = -3x - \frac{3}{2}$.

C) $y = 3x$.
D) $y = 3x - 11$.
E) $y = 3x + 9$.

5) Let $f(x) = \sqrt{6 - x}$. Which one of the following value is **not in the domain** of f(x) ? 5) _____

A) $x = -5$ B) $x = 7$ C) $x = -6$ D) $x = 6$ E) $x = 5$

6) Let $f(x) = 2x + 5$. Calculate $f^{-1}(x)$? 6) _____

A) $f^{-1}(x) = 2x - 5$

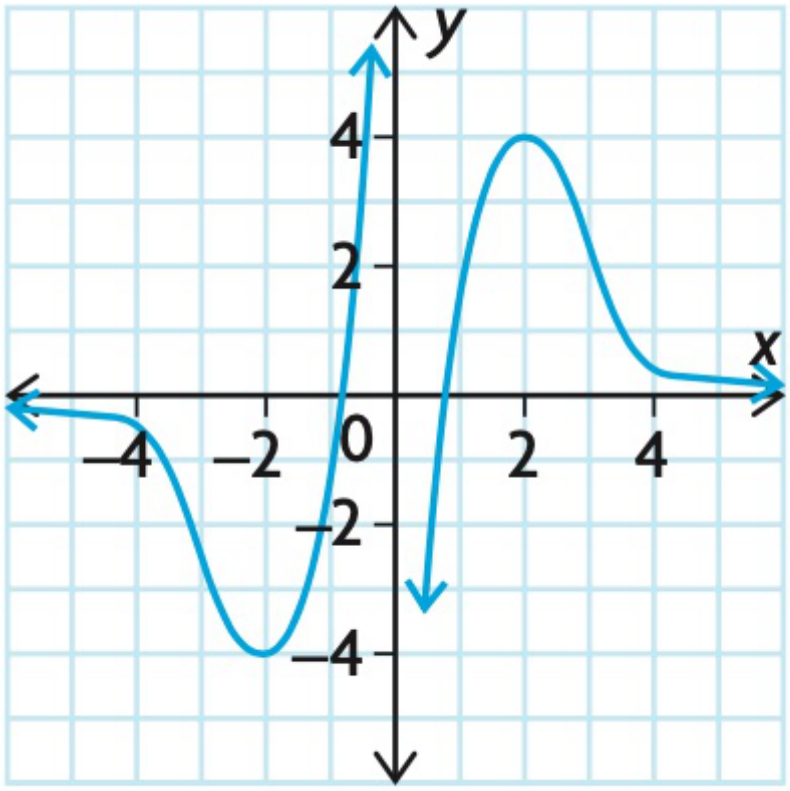
B) $f^{-1}(x) = 5 - 2x$

C) $f^{-1}(x) = 2(x - 5)$

D) $f^{-1}(x) = \frac{x - 5}{2}$

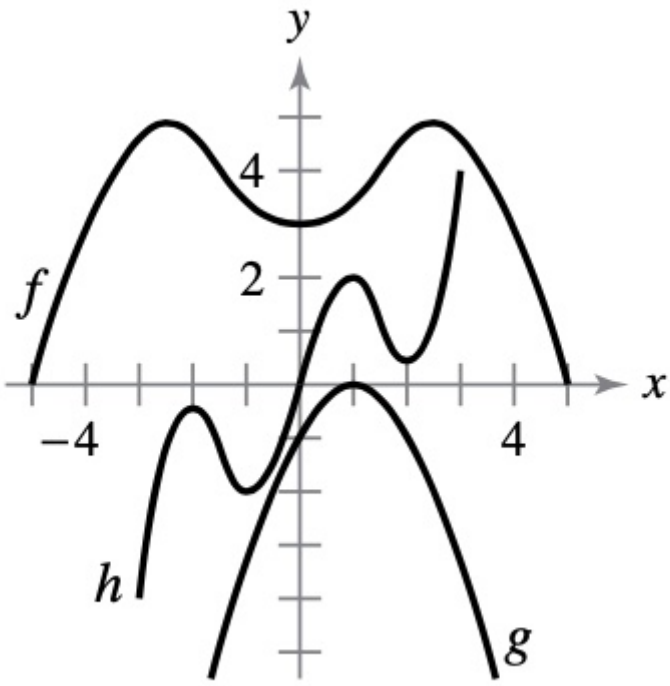
E) $f^{-1}(x) = -5$

7) The graph of f(x) is given below. Find horizontal asymptote(s) ? 7) _____



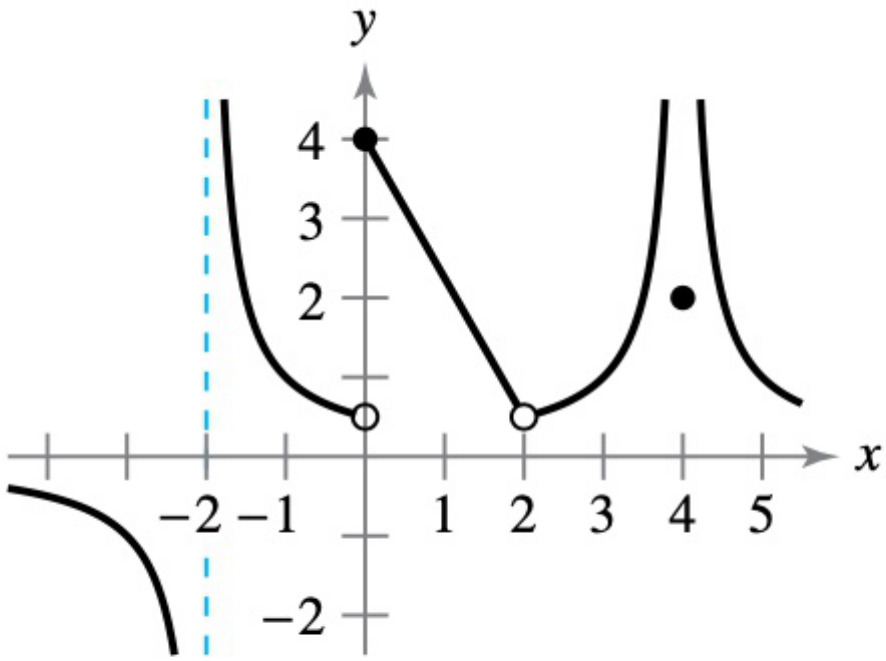
A) $y = 0$.
B) $y = -4$ and $x = -4$.
C) $x = 0$, $x = -2$, $x = 2$.
D) $y = 4$ and $x = 4$.
E) $y = 2$ and $y = -2$.

8) The graphs of f, g, h are given below. Which one(s) are **even functions ?** 8) _____



A) Only g
B) f , g and h.
C) Only f
D) g and h
E) Only h

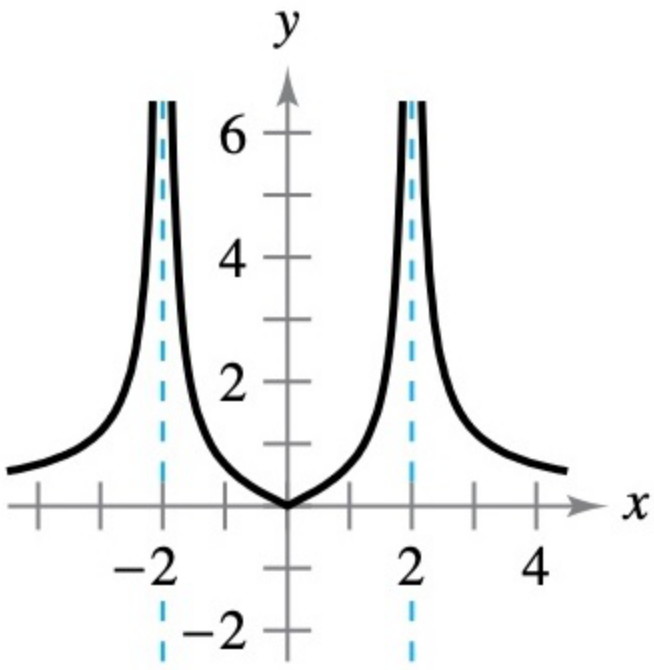
9) The graph of $f(x)$ is given below. Calculate $\lim_{x \to 0} f(x)$. 9) _____



A) 2
B) 4
C) - 2
D) Does not exist
E) 0

10) **(Short-Answer)** Let $f(x) = x$ and $g(x) = x + 1$. Then calculate $(f \circ g)(0)$? 10) _____

11) The graph of $f(x) = 2\left|\frac{x}{x^2 - 4}\right|$ is given below. Which one is **false** ? 11) _____



A) $\lim_{x \to 2^+} f(x) = \infty$.

B) $f(x)$ is not continuous at $x = 0$.

C) $\lim_{x \to \infty} f(x) = 0$.

D) $\lim_{x \to -2^-} f(x) = \infty$.

E) $\lim_{x \to -\infty} f(x) = 0$.

12) Calculate $\lim_{x \to 0} \frac{\sqrt{x+1} - 2}{x - 3}$. 12) _____

A) 3 B) 2 C) $\frac{1}{2}$ D) $\frac{1}{3}$ E) 0

13) Calculate $\lim_{x \to 0} \frac{x^4 - 5x^2}{x^2}$. 13) _____

A) 1 B) 0 C) -5 D) ∞ E) 4

14) Let $g(x) = 5 - x^2$. Then $g(t - 1)$ is 14) _____

A) $-t^2 - 2t + 6$.

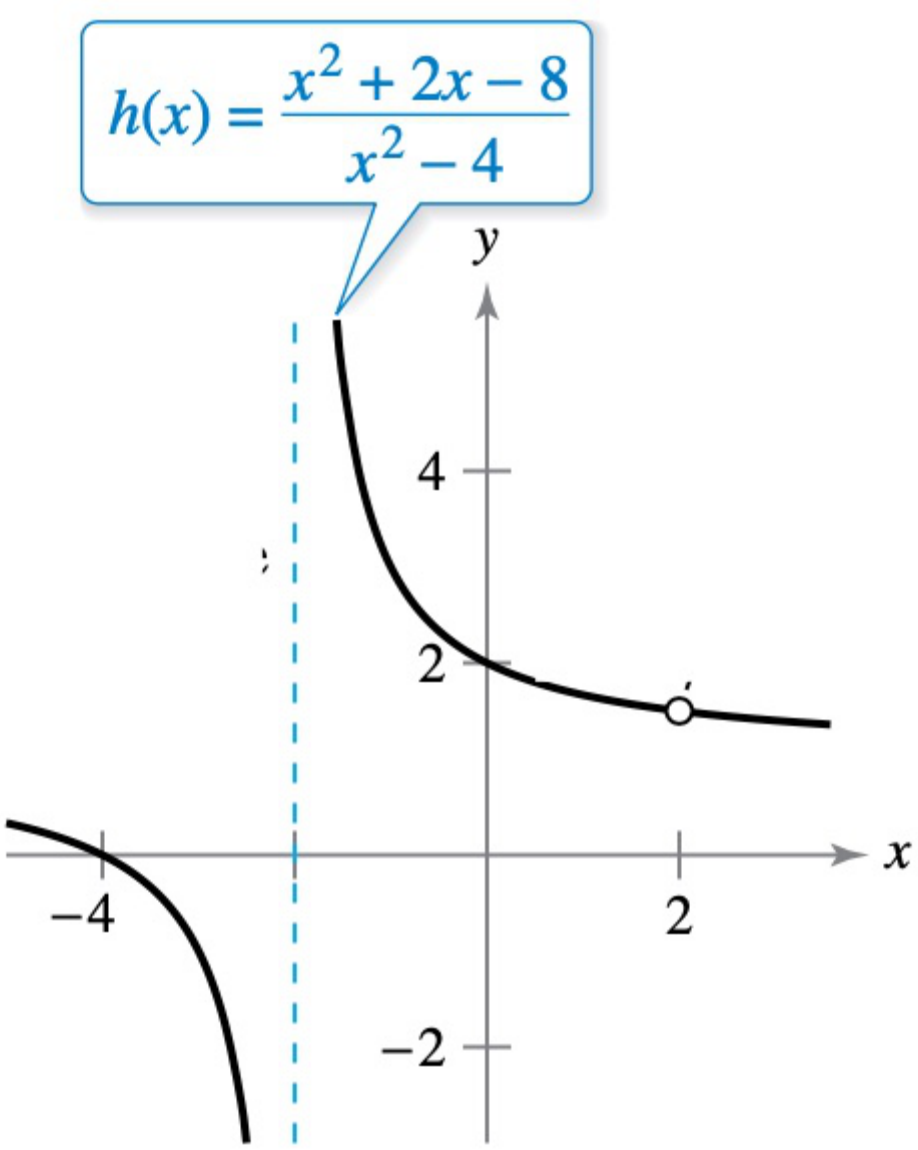
B) $-t^2 + 2t + 4$.

C) $t^2 + 3t - 4$.

D) $-3t^2 + 2t - 4$.

E) $2t^2 - 3t - 5$.

15) The graph of h(x) is given below. Which one is **false** ? 15) _____



A) x = - 2 is a vertical asymptote.

B) h(x) is not continous at x = - 2.

C) $\lim_{x \to 1} h(x) = \frac{5}{3}$.

D) h(x) is not continous at x = 2.

E) x = 2 is a vertical asymptote.

16) Calculate $\lim_{x \to 0} \frac{x}{x^2 - x}$. 16) _____

A) -1 B) 2 C) $\frac{1}{2}$ D) ∞ E) 0

17) **(Short-Answer)** $\begin{cases} 3x^2, & x \geq 1 \\ ax - 4, & x < 1. \end{cases}$ 17) _____

Find the constant a such that f(x) is continous on the entire real number line ?