HOMEWORK EXERCISES (TIME: 10 MINUTES)

21. Which of the following functions is defined when $x = -4$?

(A) $f(x) = \frac{x+4}{x-4}$
(B) $f(x) = \frac{x-4}{x+4}$
(C) $f(x) = \frac{1}{\sqrt{x^2-16}}$
(D) $f(x) = \frac{x^2-16}{\sqrt{x+4}}$
(E) $f(x) = \frac{x+4}{x^2-16}$

22. If $\frac{x^2-4}{2-\sqrt{x-4}}$ is a real number, which of the following could be the value of x ?

(A) -2
(B) 0
(C) 2
(D) 4
(E) 8

23. Which of the following is always equal to $\frac{xy-3x-4y+12}{y-3}$ when $y \neq 3$?

(A) $x + 4$
(B) $x - 4$
(C) $y + 3$
(D) 0
(E) $x - y$

24. For which of the following values of x is $\frac{x^2+2x+1}{x^4-3x^2+2}$ undefined?

(A) $-\sqrt{2}$
(B) -1
(C) 1
(D) $\sqrt{2}$
(E) All of the above

25. What is the domain of the function $f(x) = \frac{(3-x)(3+x)}{\sqrt{9-x^2}}$?

(A) All real numbers
(B) $x \leq 3$
(C) $x \neq 3$ and $x \neq -3$
(D) $-3 < x < 3$
(E) $-9 \leq x \leq 9$

26. The graphs of $f(x) = \frac{x^2-1}{x-1}$ and $g(x) = \frac{x^2-x-2}{x-2}$ are identical except where $x =$?

(A) 1 only
(B) 2 only
(C) 1 and 2
(D) -1 only
(E) -1 and -2

27. How many integers are excluded from the domain of $f(x) = \frac{x^2-64}{(x-8)\sqrt{x^2-8}}$?

(A) 3
(B) 4
(C) 5
(D) 6
(E) 7

28. Which of the following is a simplified expression equal to $\frac{x^4-2x^3+x^2}{x^3-x}$ for $x > 1$?

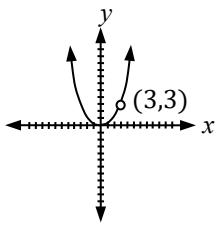
(A) $\frac{x(x-1)}{x+1}$
(B) $\frac{x+1}{x-1}$
(C) $\frac{1}{x-1}$
(D) $\frac{1}{x}$
(E) $\frac{(x-1)(x+1)}{x}$

29. If the function $\frac{(x-5)^2-k}{x-7}$ is equivalent to the function $x-3$ for all $x \neq 7$, then $x = ?$

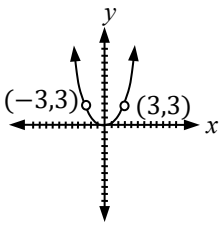
(A) -4
(B) -2
(C) 2
(D) 4
(E) 7

30. Which of the following is the graph of the function $f(x) = \frac{x^6-18x^4+81x^2}{3(x^2-9)^2}$?

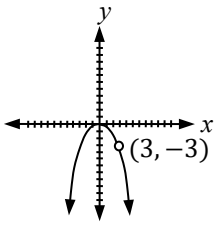
(A)



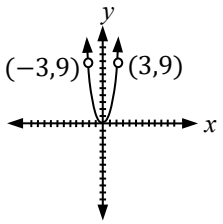
(B)



(C)



(D)



(E)