1) The interval which corresponds to the values of x satisfying $|3x - 2| < 5$ is

A) $(-1, 7/3]$

B) $[1, 3]$

C) $(-1, 7/3)$

D) $(1, 3)$

E) $(1, 3]$

2) The center and the radius of the circle represented by the equation $3x^2 + 3y^2 - 3x + 2y = 1$ are respectively

A) $(1/2, -1/3)$ and $5/6$

B) $(1/2, -1/3)$ and $7/6$

C) $(1, -2)$ and $4/9$

D) $(1/2, 1/3)$ and $5/6$

E) $(1/4, 1)$ and $5/6$

3) If $\pi < \theta < 3\pi/2$ and $\cos\theta = -1/2$ then $\sin\theta$ is equal to

A) $\sqrt{3}/4$

B) $-\sqrt{3}/2$

C) $1/2$

D) $-1/2$

E) $\sqrt{3}/2$

4) The domain of the function $f(x) = \dfrac{\sqrt{9-x^2}}{\sqrt{2-x}}$ is

A) $(-3, 2)$

B) $[-3, 2]$

C) $[-3, 2)$

D) $[-3, 3]$

E) $(-3, 2]$

5) Let $f(x) = x^2 + 1$, $g(x) = 2^x$ and $h(x) = x^3$. Then $f \circ g \circ h(x)$ is equal to

A) 2^{3x+1}

B) $(x^3 + 2^x)^2 + 1$

C) $2^{6x} + 1$

D) $(2^x)^2 + 1$

E) $4^{x^3} + 1$

6) The graph of $f(x-2) + 5$ can be obtained from the graph of $f(x)$ by

A) Shifting the graph of f to the left by two units and upward by 5 units

B) Shifting the graph of f to along the diagonal by 5 units

C) Shifting the graph of f to the right by two units and downward by 5 units

D) Shifting the graph of f to the left by two units and downward by 5 units

E) Shifting the graph of f to the right by two units and upward by 5 units

7) The quantity $\log_2 3 + 2\log_2 5 + \log_3 9$ is equal to

A) $\log_2 700$

B) $\log_2 900$

C) $\log_2 450$

D) $\log_2 300$

E) $\log_2 500$

8) The inverse of the function $f(x) = \dfrac{5x-3}{3x+7}$ is $f^{-1}(x) =$

A) $\dfrac{7x-3}{5-3x}$

B) $\dfrac{7x+3}{5-3x}$

C) $\dfrac{3x+5}{7-3x}$

D) $\dfrac{3x-7}{5-3x}$

E) $\dfrac{7x-5}{5-3x}$

9) Evaluate $\lim\limits_{x\to -4} \dfrac{3x^2-48}{x^2+2x-8}$ if it exists. (If it does not exist, choose the answer DNE.)

A) 4

B) DNE

C) -3

D) -4

E) 3

10) Evaluate $\lim_{t\to 3} \dfrac{\sqrt{t+1}-2}{t-3}$, if it exists. (If it does not exist, choose the answer DNE.)

A) ∞

B) DNE

C) $\frac{1}{4}$

D) $\frac{1}{5}$

E) 0

11) Let $a = \lim_{x\to\infty} (x^2 - x)$ and $b = \lim_{x\to 0} (x^2 - x\sin\frac{1}{x})$. Evaluate a and b. (If the limit does not exist, choose DNE.)

A) $a = \infty$, b DNE

B) $a = \infty, b = 0$

C) $a = -\infty$, b DNE

D) $a = 0, b = 0$

E) $a = 0$, b DNE

12) The total number of asymptotes, vertical and horizontal, for the graph of $f(x) = \dfrac{\sqrt{9x^2+1}}{x}$ is:

A) 3

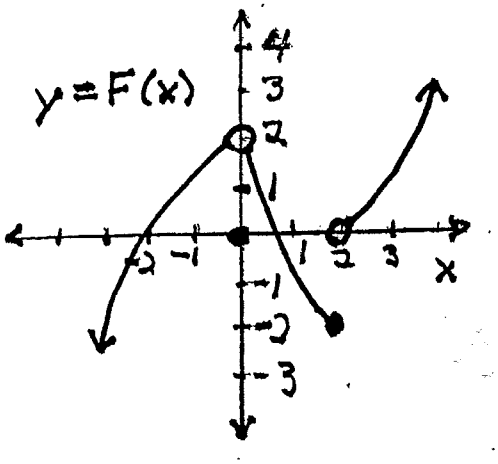
B) 4

C) 1

D) 0

E) 2

13) For the function $F(x)$ pictured, which of the following statements are true?



I. $\lim_{x \to 0} F(x) = 2$

II. $\lim_{x \to 2^-} F(x) = 0$

III. F is continuous at x=0

A) II and III only

B) All are true

C) II only

D) I only

E) I and II only

14) The quantity, $\lim_{x \to \frac{\pi}{3}} \dfrac{\cos x - \frac{1}{2}}{x - \frac{\pi}{3}}$, represents the derivative of some function $f(x)$ at some number a. Select an appropriate f(x) and a.

A) $f(x) = \cos x, a = \pi$

B) $f(x) = 3(\cos x - \frac{1}{2}), a = \pi$

C) $f(x) = \cos x - \frac{1}{2}, a = \pi$

D) $f(x) = \cos x - \frac{1}{2}, a = \frac{\pi}{3}$

E) $f(x) = \cos x, a = \frac{\pi}{3}$