

COLLEGE LEVEL MATHEMATICS

Suggested time – 50 minutes
35 Questions

Directions: In this section solve each problem. Then decide which is the best of the choices given.

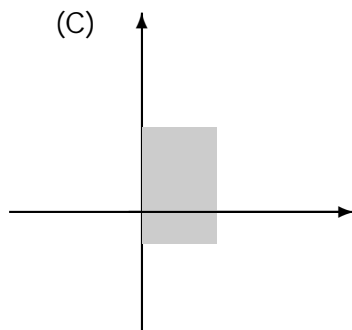
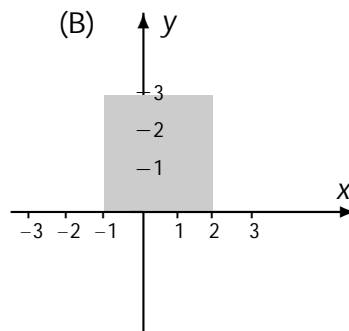
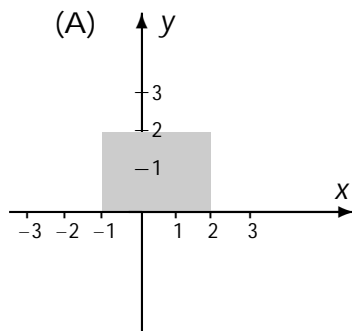
1. $2x^2 - 10x + 12 =$

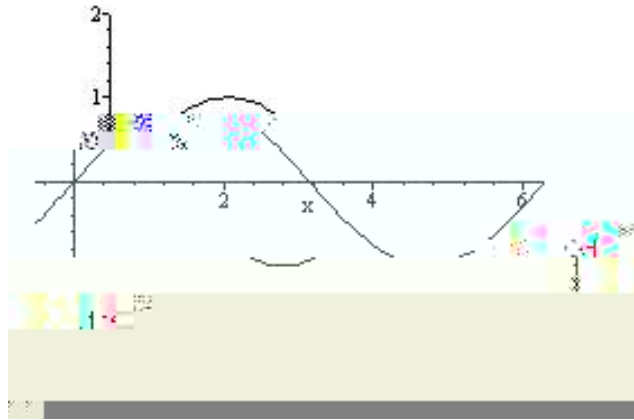
- (A) $(2x - 3)(x - 4)$ (B) $[2(x - 3)]^2$ (C) $2(x - 2)(x - 3)$ (D) $2(x + 6)(x - 1)$ (E) $2(x - 5)(x - 1)$

2. Where defined, $\frac{18x^3y^8z}{-6x^2y^4z} =$

- (A) $-3xy^4$ (B) $-3xy^2$ (C) $\frac{xy^4}{3}$ (D) $\frac{1}{3xy^2}$ (E) $\frac{y^4}{3x}$

3. Which of the following shaded regions is the graph of the region described by $-1 < x < 2$ and $0 < y < 3$?





4. The figure above is a portion of the graph of which of the following equations?

- (A) $y = \sin 2x$ (B) $y = 2 \cos x$ (C) $y = \sin x$ (D) $y = \csc x$ (E) $y = \tan x$

5. Which of the following can be factored in the form $(x + h)^2$, where h is an integer?

- (A) $x^2 + 3$ (B) $x^2 + 9$ (C) $x^2 + 6x + 12$ (D) $x^2 + 6x + 36$ (E) $x^2 + 6x + 9$

6. Where defined, $\left(\frac{x^2 + x - 6}{x + 3}\right)\left(\frac{x + 2}{x^2 - 4}\right) =$

- (A) 0 (B) 1 (C) $\frac{x-2}{x}$ (D) $\frac{x+1}{x+2}$ (E) $\frac{x+3}{x+2}$

7. Where defined, $\frac{1}{\tan} =$

- (A) $\frac{\cos}{\sin}$ (B) $\frac{\sin}{\cos}$ (C) \sec (D) \cos (E) \csc

8. If $4(x - 2) + 5 = 6 - (x + 5)$, then $x =$

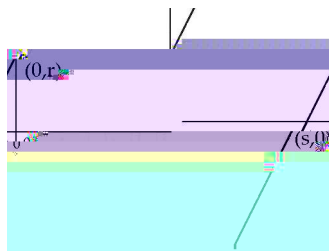
- (A) $\frac{9}{4}$ (B) $\frac{14}{9}$ (C) $-\frac{14}{9}$ (D) $\frac{4}{5}$ (E) $-\frac{4}{9}$

9. For what values of x is $|2x + 5| = 15$?

- (A)

12. If $\sin 50^\circ = x$, then which one of the following is true?

- (A) $0 < x < \frac{1}{2}$
 (B) $\frac{1}{2} < x < \frac{\sqrt{2}}{2}$
 (C) $\frac{\sqrt{2}}{2} < x < \frac{\sqrt{3}}{2}$
 (D) $\frac{\sqrt{3}}{2} < x < 1$
 (E) $1 < x < \frac{3}{2}$



13. If the equation of the linear function in the figure is $y = mx + b$, then $m =$

- (A) r (B) $-\frac{r}{s}$ (C) $\frac{r}{s}$ (D) $-\frac{s}{r}$ (E) $\frac{s}{r}$

14. If $a_2 = 2a_1 + 3$ and $a_3 = 4a_2 + 3^2$, then in terms of a_1 , $a_1 + a_2 + a_3 =$

- (A) $7a_1 + 27$ (B) $3a_1 + 27$ (C) $10a_1 + 63$ (D) $11a_1 + 63$ (E) 11

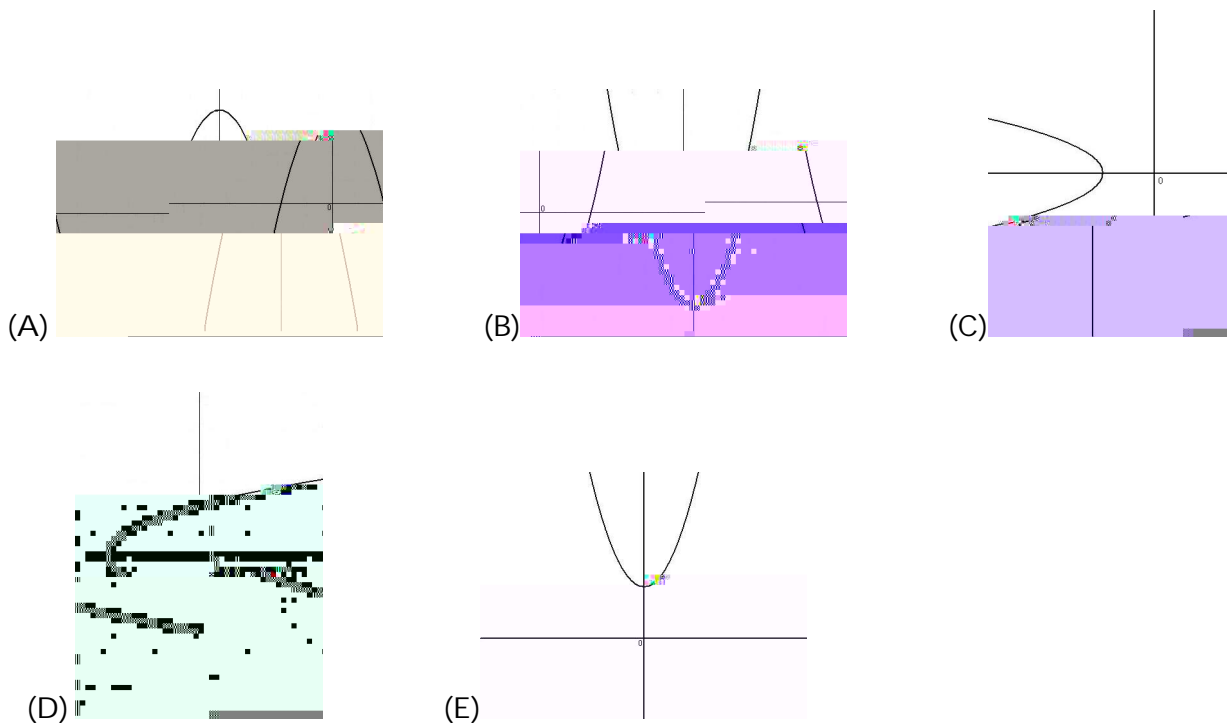
(A) 3^5

$$\begin{cases} y = -x + 2 \\ y = x^2 \end{cases}$$

22. What values of x satisfy the system of equations above?

- (A) 1 and -2 (B) 2 and -2 (C) 2 and -1 (D) 4 and 1 (E) 4 and 2

23. Which one of the following could represent the graph of $y = -x^2 + c$?



24. $\csc \frac{\pi}{3} =$

- (A) 2 (B) $\frac{\sqrt{3}}{2}$ (C) $\frac{2}{\sqrt{2}}$ (D) $\frac{2}{3}$ (E) $\frac{\sqrt{2}}{2}$

25. If $f(x) = 3x^2 - 4$, then $f(-x) =$

- (A) $f(x - 1)$ (B) $-f(x)$ (C) 0 (D) $f(x)$ (E) $f(x + 1)$

26. $\sum_{n=4}^{11} n =$

- (A) 7 (B) 10 (C) 60 (D) 66 (E) $\frac{11!}{4!}$

27. $8(2^{\frac{3}{2}})(4^{\frac{3}{4}}) =$

- (A) $2^{\frac{4}{9}}$ (B) 2^6 (C) $2^{\frac{27}{4}}$ (D) 2^7 (E) 2^9

