MONTGOMERY COLLEGE
Department of Mathematics

College Mathematics Practice Test

Review the following questions only if you have already successfully completed second year algebra or a higher level mathematics course.

1. $(x+y)^2+(x-3y)^2=$

a) $2x^2+8xy+10y^2$
b) $2x^2+10y^2$
c) $2x^2+7y^2$
d) $2x^2-8y^2$
e) $2x^2-4xy+10y^2$

2. If $f(x)=\dfrac{x-5}{2}$ and $g(x)=x^2-2x$ then $g(f(-1))=$

a) 1 b) 3 c) 15 d) 9 e) –3

3. A rectangle has a length of $N-3$ and a width of $3N^2+4N$. What is its perimeter?

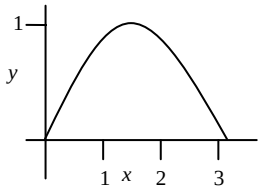
a) $3N^3-5N^2-12N$
b) $3N^3+4N^2-3$
c) $3N^2+5N-3$
d) $3N^3-12N$
e) $6N^2+10N-6$

4. $\dfrac{8x}{3x-6}\cdot\dfrac{x^2-4}{2x+4}=$

a) $-\dfrac{4}{3}(x-1)$
b) $\dfrac{4x(x-2)}{3(x+2)}$
c) $\dfrac{4x^3-16x}{6x^2-12}$
d) $\dfrac{4}{3}x$
e) $\dfrac{x^2+8x-4}{5x-2}$

5. Which of the following could be the graph of $y = \cos x$ for $0 \le x \le \pi$?

a)



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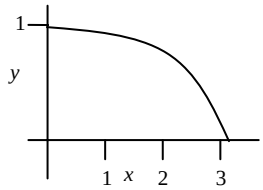

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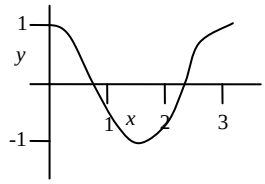

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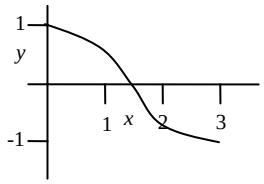

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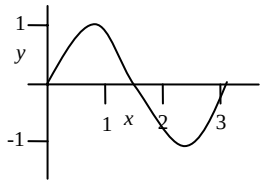
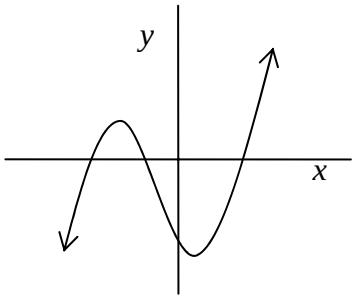


6. $\sum_{n=1}^{4} n(n-1) =$

a) 20
b) 12
c) 0
d) 144
e) 22

7. Which of the following equations could represent the graph at right?



a) $y = 3x^3 - 18x - 12$
b) $y = x^2 - 4$
c) $y = x^3$
d) $y = -2x - 4$
e) $y = -x^3 + 3x^2 - 4$

8. Simplify $\dfrac{4}{4+\sqrt{14}}$

a) $\dfrac{1}{1+\sqrt{14}}$
b) $8 - 2\sqrt{14}$
c) $\dfrac{8+2\sqrt{14}}{15}$
d) $\dfrac{1-\sqrt{14}}{-13}$
e) $\dfrac{2\sqrt{2}}{3}$

9. Which of the following is NOT equal to zero?

a) $\cos\left(\frac{\pi}{2}\right)$

b) $\tan\left(0^{\circ}\right)$

c) $\cos\left(\frac{\pi}{4}\right)-\sin\left(\frac{\pi}{4}\right)$

d) $\sin^{-1}(\pi)$

e) $\cos^{-1}(1)$

10. The x-value(s) of all intersection points of $y=6-2x$ and $y=x^2+3$ is (are)

a) –1 only b) –3 only c) 1, –3 d) –1, 3 e) 1, 3

11. $\sin\theta\left(\csc\theta-\sin\theta\right)=$

a) $\cos^2\theta$

b) $\tan\theta-\sin^2\theta$

c) $\sec\theta-\sin^2\theta$

d) $\cot\theta-\sin^2\theta$

e) $\sin^2\theta$

12. $\log x+\log 20=2$. Then $x=$

a) $\frac{1}{10}$ b) 80 c) 5 d) –18 e) 1

13. x^2+1 is a factor of $f(x)$. Which of the following is TRUE?

a) $f(-1)=0$

b) $f(x)$ has a y-intercept of -1

c) $f(i)=0$ where $i=\sqrt{-1}$

d) $f(x)$ has an x-intercept of 1

e) $f(0)=1$

14. $2^{-5}\cdot 64^{2/3}=$

a) 512 b) $\frac{1}{512}$ c) 16 d) 1 e) $\frac{1}{2}$

15. What is the least common denominator for $\frac{3x}{x^2-9}$ and $\frac{4}{2x+6}$?

a) $2\left(x^2-9\right)$

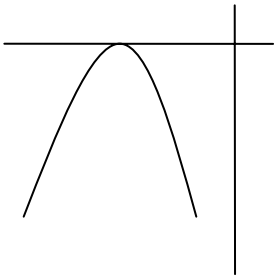
b) $3x(2x+6)+4\left(x^2-9\right)$

c) $2(x-3)$

d) $2(x+3)^2(x-3)$

e) $\left(x^2-9\right)(2x+6)$

16. Which of the following could be the graph of $y=-(x+a)^2$ where $a>0$?

a)


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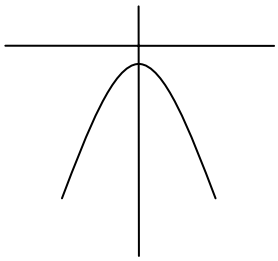

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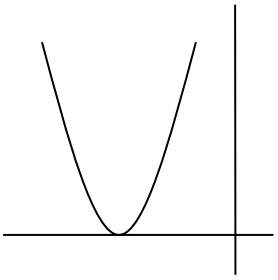

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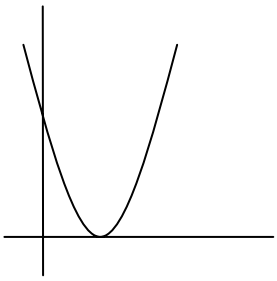

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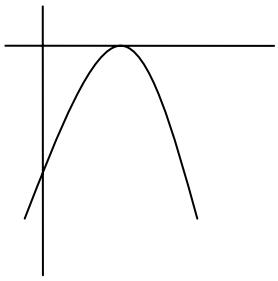

17. Find the equation of the line passing through $(2,-4)$ and parallel to $3x+2y=4$.

a) $y=-\frac{3}{2}x+1$

b) $y=\frac{3}{2}x-7$

c) $y=-\frac{2}{3}x-\frac{8}{3}$

d) $y=-\frac{3}{2}x-1$

e) $y=\frac{3}{2}x+8$

18. Solve $\tan^2 x=1$ where $0\le x\le\pi$. Then $x=$

a) $\frac{\pi}{2}$ b) $\frac{\pi}{4},\frac{3\pi}{4}$ c) $1,-1$ d) 0 e) $\frac{\pi}{4}$

19. Solve for y: $\frac{1}{y+1} + a = \frac{3}{y+1}$

a) $\frac{2}{a}$ b) $\frac{2-a}{a}$ c) $2a-1$ d) $2-a$ e) $a-3$

20. Solve $|2x-8|<10$

a) $x<9$ b) $-9<x<9$ c) $x<1$ d) $x>9$ e) $-1<x<9$

Answers to College Mathematics Practice Test

1. e
2. c
3. e
4. d
5. d
6. a
7. a
8. b
9. d
10. c
11. a
12. c
13. c
14. e
15. a
16. a
17. d
18. b
19. b
20. e