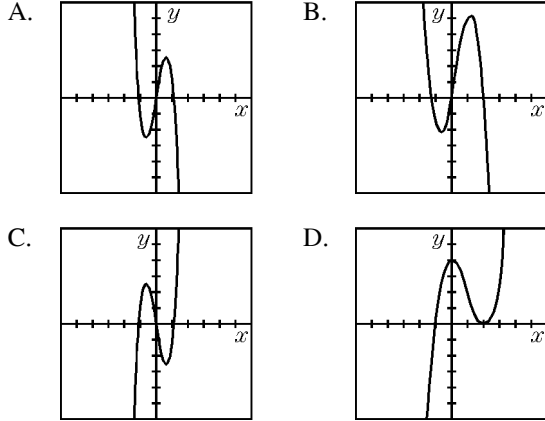


Practice for Alg. 2 Exam

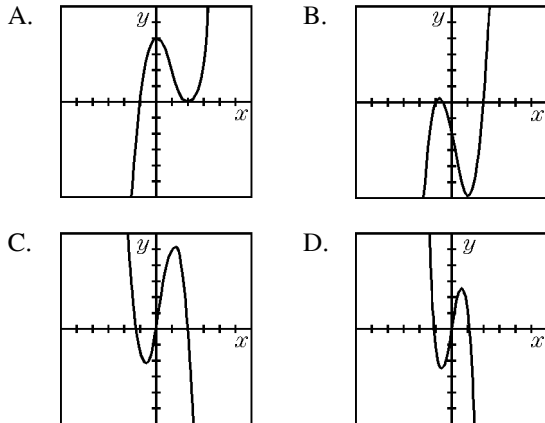
Name: _____

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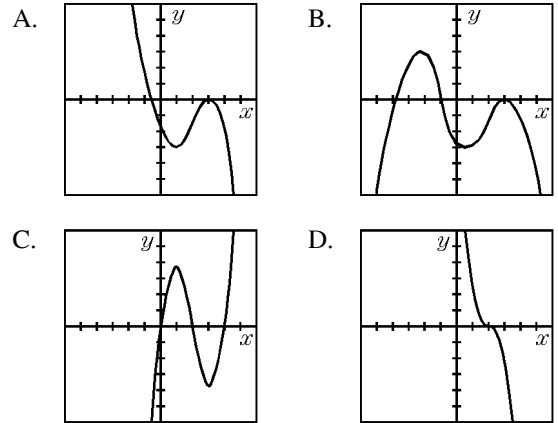
1. Which of the following is the graph of $f(x) = 5x^3 - 6x$?



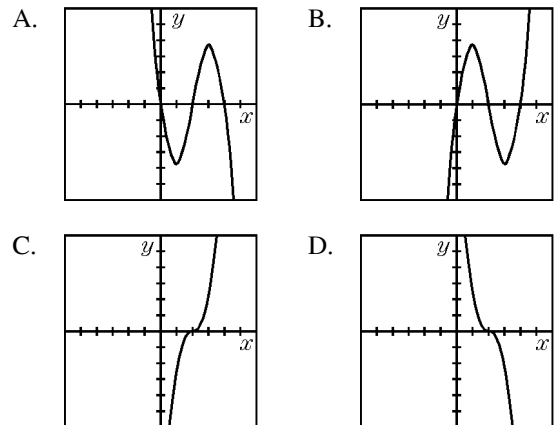
2. Which of the following is the graph of $y = a(x + 1)(x - 2)(x - 2)$, where $a > 0$?



3. Which of the following graphs best illustrates the graph of $y = a(x - b)^2(x - c)$ where $a < 0$ and $b \neq c$?

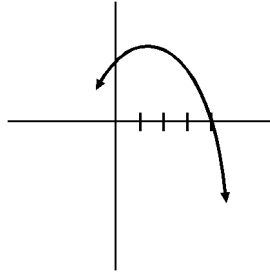


4. Which of the following graphs best illustrates the graph of $y = a(x - b)^3$ where $a > 0$?

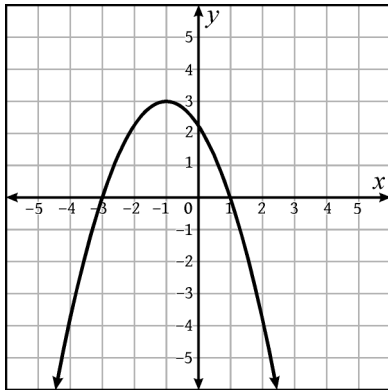


5. The graph of $y = -x^2 - 2x - 8$ is a parabola. (A portion of the graph is shown.) The x -intercepts of this parabola are 4 and _____.

- A. -8 B. -3.5
C. -3 D. -2



6. Given the graph below for $f(x)$ and the equation $g(x) = -2x^2 + 4x - 3$, which has the greater maximum?

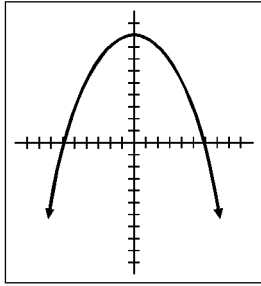


- A. $g(x)$; maximum = -1
B. $f(x)$; maximum = -1
C. $f(x)$; maximum = 3
D. $g(x)$; maximum = 5

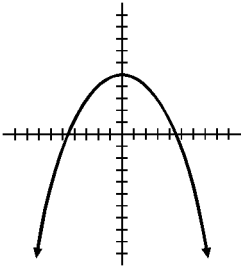
7. If $f(x) = (2x - 3)^2$ and $g(x) = 2x^2 + x - 1$, find $f(x) + g(x)$.

- A. $5x^2 - 10x + 7$ B. $6x^2 - 10 + 9$
C. $6x^2 - 11x + 8$ D. $6x^2 - 10x + 8$

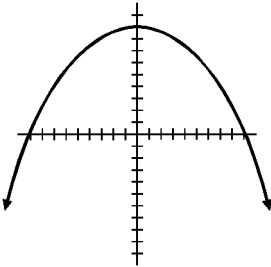
8. The box contains the graph of the equation $y = -\frac{1}{4}x^2 + 9$. What would the graph look like if the equation were changed to $y = -x^2 + 9$?



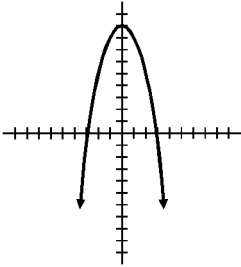
A.



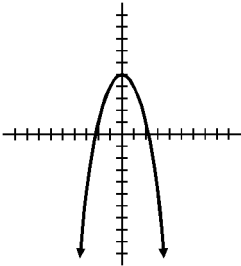
B.



C.



D.



9. If $f(x) = x^3$ is transformed into the graph of $h(x) = (x - 3)^3 - 2$, which of the following describes the transformation?

- A. Translation of 3 units to the right and 2 units down
- B. Translation of 3 units to the left and 2 units down
- C. Translation of 2 units to the right and 3 units down
- D. Translation of 2 units to the left and 3 units down

10. $y = x^2$ is an example of an even function. If k is a positive integer, which of the following transformations allows the function to retain its even symmetry?

- I. $y = (x + k)^2$
- II. $y = x^2 + k$
- III. $y = kx^2$

- A. I and II
- B. I and III
- C. II and III
- D. I, II and III

11. $y = x^3$ is an example of an odd function. If k is a positive integer, which of the following transformations allows the function to retain its odd symmetry?

I. $y = (x + k)^3$

II. $y = x^3 + k$

III. $y = kx^3$

- A. II B. I and III
 C. II and III D. III

12. Factor: $12y^2 + 3y - 9$

- A. $3(4y - 3)(y + 1)$ B. $(4y - 3)(3y + 3)$
 C. $(6y - 9)(y + 1)$ D. $(6y + 9)(y - 1)$

13. Complete the table.

Polynomial	Factors
$x^2 - 2x - 15$	
$x^2 - 2xy - 15y^2$	
$x^2y^2 - 2xy - 15$	
$5x^2 - 10x - 75$	
$2x^2y - 4xy - 30y$	

14. What is the maximum number of real roots the equation $2x^6 + x^4 - 5x^2 + 1 = 0$ can have?

- A. 0 B. 1 C. 4 D. 6

15. According to the Rational Root Theorem, what are the possible rational roots of $2x^4 + 3x^2 - 7x + 3 = 0$?

- A. $\pm 1, \pm 3$ B. $\pm 1, \pm 2, \pm \frac{1}{3}, \pm \frac{2}{3}$
 C. $\pm 1, \pm 3, \pm \frac{1}{2}, \pm \frac{3}{2}$ D. $\pm 1, \pm 2, \pm 3, \pm \frac{2}{3}$

16. What are the zeros of the function
 $f(x) = x^3 + 4x^2 + x - 6$?

A. -3, -2, and 1 B. -2, -1, and 3
C. -1, 2, and 3 D. 1, 2, and 3

17. Determine the real roots of
 $(x^2 + 4)(3x + 1)(x^2 - 9) = 0$.

A. $\frac{1}{3}$, -3 B. $-\frac{1}{3}$, ± 3
C. $-\frac{1}{3}$, -2, 3 D. $-\frac{1}{3}$, ± 2 , ± 3

18. Find the quotient: $x - 4 \overline{) x^3 + 2x^2 - 16x - 32}$

A. $x^2 - 2x - 12$
B. $x^2 + 6x + 8$
C. $x^2 - 2x - 24 + \frac{64}{x - 4}$
D. $x^2 + 4x + 1 + \frac{1}{x - 4}$

19. Use synthetic division to divide $2x^4 - 17x^2 - 5$ by $x - 3$.

A. $Q(x) = 2x^3 + 6x^2 + x + 3$ R 4
B. $Q(x) = 2x^3 + 6x^2 + x - 3$ R 4
C. $Q(x) = 2x^3 + 3x^2 - x + 9$ R 7
D. $Q(x) = x^3 + 4x^2 - 19$ R 1

20. Solve: $2x^2 - 5x + 1 = 4$

A. -1, -3 B. $-\frac{1}{2}$, 3
C. 2, -2 D. 3, $\frac{1}{2}$

21. One of the roots of the equation $x^2 + 3x - 6 = 0$ is _____.

A. $\frac{-3 - \sqrt{33}}{2}$ B. $\frac{-3 + \sqrt{33}}{6}$
C. $\frac{3 + \sqrt{33}}{2}$ D. $\frac{3 - \sqrt{33}}{6}$

22. Solve: $x^2 - 4x = 8$

- A. $\{2 + 4\sqrt{3}, 2 - 4\sqrt{3}\}$
- B. $\{2 + 2\sqrt{3}, 2 - 2\sqrt{3}\}$
- C. $\{-2 + 4\sqrt{3}, -2 - 4\sqrt{3}\}$
- D. $\{0, 4\}$

23. When expressed in terms of the imaginary unit i , $7\sqrt{-8}$ is the same as:

- A. $14i\sqrt{2}$
- B. $56i$
- C. $28i\sqrt{2}$
- D. $14i + \sqrt{2}$

24. Express $4\sqrt{-32}$ in terms of i .

- A. $16i$
- B. $8i\sqrt{2}$
- C. $16i\sqrt{2}$
- D. $8i$

25. Simplify: i^{61}

- A. i
- B. $-i$
- C. 1
- D. -1

26. Simplify: $i^4 + i^2$

- A. 0
- B. $1+i$
- C. $1-i$
- D. $2i$

27. Add: $\sqrt{-4} + \sqrt{-49}$

- A. $5 + i$
- B. $5 - i$
- C. $9i$
- D. $-9i$

28. When written in standard $(a + bi)$ form, the product of $6 + 7i$ and $5i$ is _____.

- A. $30 + 35i$
- B. $30 - 35i$
- C. $-35 + 30i$
- D. $35 + 30i$

29. Express the product in standard form.

$$(4 + 2i)(7 - 6i)$$

- A. $40 + 10i$
- B. $40 - 10i$
- C. $16 + 10i$
- D. $16 - 10i$

30. Find the roots of the equation $2x^2 - 5x + 4 = 0$

- A. $5 \pm \frac{i\sqrt{13}}{4}$ B. $\frac{-5 \pm \sqrt{13}}{2}$
 C. $\frac{-5 \pm i\sqrt{13}}{2}$ D. $\frac{5 \pm i\sqrt{13}}{4}$

31. Express $(2 - 3i)^2$ in the form $a + bi$.

- A. $-5 - 12i$ B. $13 - 12i$
 C. -5 D. 13

32. What is the *least* possible degree of a rational integral equation with rational coefficients, if three of its roots are -3 , $2 + 3i$ and $4 - \sqrt{7}$?

- A. 3 B. 4 C. 5 D. 6

33. Given the equation $18x^4 + 27x^3 - 67x^2 + 21x = 63$, which of the following root combinations are possible?

- I. 4 real roots
 II. 2 real and 2 complex roots
 III. 4 complex roots

- A. I only B. I and II
 C. I and III D. I, II and III

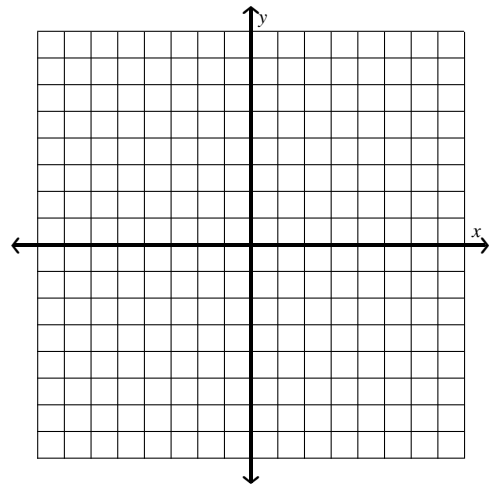
34. How many points of intersection are there between the graphs of $f(x) = x^2 + 4$ and $g(x) = 6x - 5$?

- A. 0 B. 1 C. 2 D. 4

35. Solve $g(x) = h(x)$ graphically.

$$g(x) = x^2 + 4x + 4$$

$$h(x) = x + 2$$



- A. $(1, 1)$, $(-2, 0)$ B. $(-1, 1)$, $(-2, 0)$
 C. $(0, 2)$, $(-1, 1)$ D. $(1, 3)$, $(2, 4)$

36. Solve $f(x) = g(x)$ algebraically.

$$f(x) = x^2 - x - 30$$

$$g(x) = -2x + 26$$

- A. $(-10, 2)$, $(10, 12)$ B. $(-8, 42)$, $(7, 12)$
 C. $(8, 24)$, $(7, 1)$ D. $(-10, 2)$, $(4, -3)$

Practice for Alg. 2 Exam 12/10/2014

- | | |
|---|---|
| <p>1.
Answer: C
Objective: F.IF.07C</p> <p>2.
Answer: A
Objective: F.IF.07C</p> <p>3.
Answer: A
Objective: F.IF.07C</p> <p>4.
Answer: C
Objective: F.IF.07C</p> <p>5.
Answer: D
Objective: F.IF.07A</p> <p>6.
Answer: C
Objective: F.IF.09</p> <p>7.
Answer: C
Objective: F.BF.01B</p> <p>8.
Answer: C
Objective: F.BF.03</p> <p>9.
Answer: A
Objective: F.BF.03</p> <p>10.
Answer: C
Objective: F.BF.03</p> <p>11.
Answer: D
Objective: F.BF.03</p> <p>12.
Answer: A
Objective: A.SSE.03A</p> <p>13.
Answer: $(x - 5)(x + 3)$; $(x - 5y)(x + 3y)$;
$(xy - 5)(xy + 3)$; $5(x - 5)(x + 3)$;
$2y(x - 5)(x + 3)$
Objective: A.SSE.03A</p> | <p>14.
Answer: D
Objective: A.APR.03</p> <p>15.
Answer: C
Objective: A.APR.03</p> <p>16.
Answer: A
Objective: A.APR.03</p> <p>17.
Answer: B
Objective: A.APR.03</p> <p>18.
Answer: B
Objective: A.APR.02</p> <p>19.
Answer: A
Objective: A.APR.02</p> <p>20.
Answer: B
Objective: A.REI.04B</p> <p>21.
Answer: A
Objective: A.REI.04B</p> <p>22.
Answer: B
Objective: A.REI.04B</p> <p>23.
Answer: A
Objective: N.CN.01</p> <p>24.
Answer: C
Objective: N.CN.01</p> <p>25.
Answer: A
Objective: N.CN.02</p> <p>26.
Answer: A
Objective: N.CN.02</p> <p>27.
Answer: C
Objective: N.CN.02</p> |
|---|---|

28.
Answer: C
Objective: N.CN.02
29.
Answer: B
Objective: N.CN.02
30.
Answer: D
Objective: N.CN.07
31.
Answer: A
Objective: N.CN.08
32.
Answer: C
Objective: N.CN.09
33.
Answer: D
Objective: N.CN.09
34.
Answer: B
Objective: A.REI.11
35.
Answer: B
Objective: A.REI.11
36.
Answer: B
Objective: A.REI.11