

ALGEBRA AND TRIGONOMETRY FOR COLLEGE READINESS

Chapter 5 Form A

NAME _____

1. Match the expression in Column I with its equivalent expression from Column II. Choices may be used once, more than once, or not at all.

Column I	Column II	
a. 6^0	A. $\frac{1}{8}$	1. a. <u>E</u>
b. $6^{-1} + 2^{-1}$	B. -1	b. <u>G</u>
c. $(6+2)^{-1}$	C. $\frac{1}{36}$	c. <u>A</u>
d. 6^{-2}	D. $\frac{1}{3}$	d. <u>C</u>
e. $(-6)^0$	E. 1	e. <u>E</u>
f. -6^2	F. 36	f. <u>H</u>
g. $(-6)^{-2}$	G. $\frac{2}{3}$	g. <u>C</u>
h. -6^0	H. -36	h. <u>B</u>
i. $\frac{6^{-1}}{2^{-1}}$	I. None of these	i. <u>D</u>

For Exercises 2-4, simplify. Write answers with only positive exponents. Assume all variables represent nonzero real numbers.

2. $\left(\frac{4}{5}\right)^8 \left(\frac{4}{5}\right)^{-5} \left(\frac{4}{5}\right)^{-4}$

2. $\frac{\left(\frac{5}{4}\right)^1}{1}$ or $\frac{5}{4}$

3. $\frac{6^{-2}r^{-3}}{2^3(r^{-5})^{-3}}$

3. $\frac{1}{2^3 \cdot 6^2 \cdot r^{18}}$ OR $\frac{1}{288r^{18}}$

4. $(-5c^{-3}d^2)^3 (7c^{-3}d^{-8})^0$

4. $\frac{-5^3 d^6}{c^9}$ OR $\frac{-125d^6}{c^9}$

5. Write 5.3×10^4 in standard form.

5. 53000

6. Use scientific notation to evaluate $\frac{(220,000)(0.0000014)}{0.000011}$.

6. 28000 or 2.8×10^4

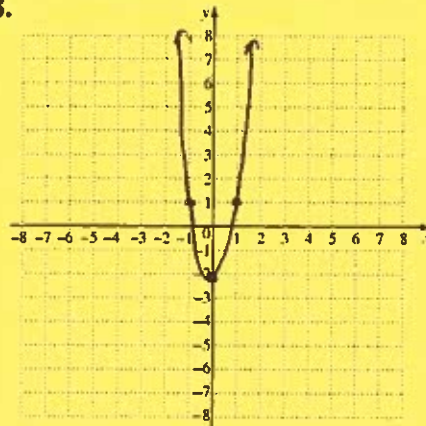
7. Let $P(x) = -2x^2 - 4x - 4$; find $P(-4)$.

7. -20

8. Graph the function defined by $f(x) = 3x^2 - 2$.

x	y
-2	10
-1	1
0	-2
1	1
2	10

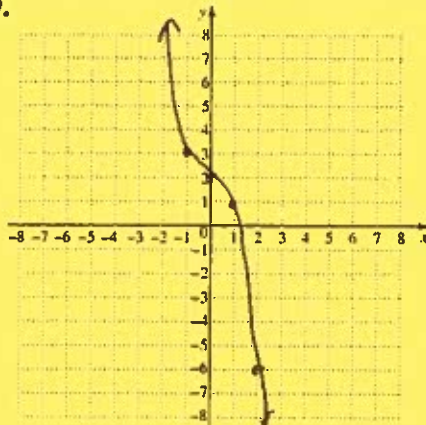
8.



9. Graph the function defined by $y = -x^3 + 2$.

x	y
-2	10
-1	3
0	2
1	1
2	-6

9.



10. The number of applicants (in thousands) to United States medical schools from 1996–2007 can be modeled by the polynomial function defined by
- $$f(x) = .007x^3 + 0.208x^2 - 3.55x + 46.9,$$
- where $x = 0$ corresponds to 1996, $x = 1$ corresponds to 1997, and so on. Use this model to approximate the number of applicants in 2004. (Source: based on data from www.aamc.org/data/facts/2007/2007summary2.htm.)
- A. 35,396 B. 36,901 C. 39,000 D. 42,335
11. The unemployment rate in a certain community can be modeled by the equation $y = 0.0248x^2 - 0.4810x + 7.8543$, where y is the unemployment rate (percent) and x is the month ($x = 1$ represents January, $x = 2$ represents February, etc.) Use the model to find the unemployment rate in August. Round your answer to the nearest tenth.
- A. 5.9% B. 5.7% C. 5.6% D. 5.5%

For Exercises 12–19, perform the indicated operation.

12. $(6x^3 - 5x^2 + 9x - 2) - (8x^3 - 7x + 9) + (10x^2 - 5x)$
- A. $-2x^3 + 5x^2 + 11x - 11$ B. $-2x^3 + 5x^2 - 3x - 11$
 C. $-2x^3 + 5x^2 + 11x - 7$ D. $-2x^3 + 5x^2 - 3x - 7$
13. $(3a - 2)(2a^2 - 3a + 1)$
- A. $6a^3 - 5a^2 + 9a - 2$ B. $6a^3 - 13a^2 - 3a - 2$
 C. $6a^3 - 13a^2 + 3a - 2$ D. $6a^3 - 13a^2 + 9a - 2$
14. $(4x - 5)(2x + 3)$
- A. $8x^2 - 15$ B. $8x^2 - 2x - 15$
 C. $8x^2 + 2x - 15$ D. $8x^2 - 22x - 15$
15. $(2r - 3s)^2$
- A. $4r^2 - 9s^2$ B. $4r^2 + 9s^2$
 C. $4r^2 - 12rs + 9s^2$ D. $4r^2 - 6rs + 9s^2$

10. A11. C12. A13. D14. C15. C

16. $(3x-4y)(3x+4y)$ 16. B
 A. $9x^2 - 12xy - 16y^2$ B. $9x^2 - 16y^2$
 C. $9x^2 - 24xy - 16y^2$ D. $9x^2 + 12xy - 16y^2$
17. $[4y - (5z+1)][4y + (5z+1)]$ 17. D
 A. $16y^2 + 25z^2 + 10z - 1$ B. $16y^2 + 25z^2 - 10z - 1$
 C. $16y^2 - 25z^2 + 10z + 1$ D. $16y^2 - 25z^2 - 10z - 1$
18. $(64g^4h^3 - 8g^2h^4 + 12gh^5) \div (4gh)$ 18. C
 A. $16g^5h^4 - 2g^3h^5 + 3g^2h^6$ B. $16g^3h^2 - 2gh^3 + 3gh^4$
 C. $16g^3h^2 - 2gh^3 + 3h^4$ D. $16g^3h^2 + 2g^3h^5 + 3gh^4$
19. $\frac{3a^3 - 11a^2 + 25a - 25}{3a - 5}$ 19. C
 A. $a^2 - 4a + 5$ B. $a^2 - 2a - 5$
 C. $a^2 - 2a + 5$ D. $a^2 - 6a + 5$
20. If $f(x) = x^2 - 3x - 2$ and $g(x) = x + 2$, find $(f \circ g)(x)$. 20. A
 A. $x^2 + x - 4$ B. $x^2 + 2x$
 C. $x^3 - x^2 - 8x - 4$ D. $x^2 - 4x - 4$
21. If $f(x) = x^2 - 4x - 5$ and $g(x) = x - 2$, find $(f \circ g)(-3)$. 21. D
 A. 14 B. 11 C. -80 D. 40
22. If $f(x) = x^2 - 2x - 1$ and $g(x) = 3x - 1$, find $(g \circ f)(x)$, 22. D
 A. $9x^2 - 12x + 2$ B. $3x^3 - 7x^2 - x + 1$
 C. $x^2 + x - 2$ D. $3x^2 - 6x - 4$
23. If $f(x) = x^2 - 4x + 5$ and $g(x) = x - 2$, find $(fg)(x)$. 23. B
 A. $x^3 - 6x^2 - 3x - 10$ B. $x^3 - 6x^2 + 13x - 10$
 C. $x^3 - 8x^2 - 13x - 10$ D. $x^3 + 2x^2 - 3x - 10$

24. If $f(x) = 2x^4 + 5x^2 + 6$ and $g(x) = 2x^2 + 3$, find $\left(\frac{f}{g}\right)(x)$. 24. B

A. $x^2 + 1$

B. $x^2 + 1 + \frac{3}{2x^2 + 3}$

C. $x^2 + 4 - \frac{6}{2x^2 + 3}$

D. $x^2 + 4 + \frac{18}{2x^2 + 3}$

25. If $f(x) = 2x^2 - 3x + 1$ and $g(x) = 2x - 1$, find $\left(\frac{f}{g}\right)(-3)$. 25. C

A. $-\frac{19}{7}$

B. $\frac{19}{7}$

C. -4

D. 4

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Chapter 6 Form ANAME _____

For Exercises 1–15, factor completely.

- | | | | |
|-----|------------------------------------|-----|-------|
| 1. | $25g^2 - 25g$ | 1. | _____ |
| 2. | $(f + 4)(2f - 3) + (f + 4)(f + 4)$ | 2. | _____ |
| 3. | $ax + 2ay + bx + 2by$ | 3. | _____ |
| 4. | $6x^2 + 5xy - y^2$ | 4. | _____ |
| 5. | $4m^2 + 20mn + 25n^2$ | 5. | _____ |
| 6. | $8x^3 - 1$ | 6. | _____ |
| 7. | $49c^6 - 4m^2$ | 7. | _____ |
| 8. | $4z^4 - 4z^2 - 15$ | 8. | _____ |
| 9. | $x^2 + 10x + 25 - 64y^2$ | 9. | _____ |
| 10. | $81c^2 - 64d^2$ | 10. | _____ |
| 11. | $-2x^2 + 7x - 3$ | 11. | _____ |
| 12. | $3p^2 - 14pq + 8q^2$ | 12. | _____ |
| 13. | $30x^5y^2 - 5x^2y^3 + 20x^2y^4$ | 13. | _____ |