

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

1) If $f(x) = \frac{4x}{8(x+2)(-x-1)}$, which of the following are true? 1) _____

- (I) -1 is the domain
 - (II) $f\left(\frac{1}{2}\right) = -\frac{1}{15}$
 - (III) $f(0) = -\frac{1}{16}$
 - (IV) f is not defined at $x = -2$ and $x = -1$
- A) (I) and (II)
 - B) (II) and (III)
 - C) (II) and (IV)
 - D) (I) and (IV)
 - E) none of the above

2) For $f(x) = -x^2 + 3x + 1$ compute $f(x+1)$. 2) _____

- F) $-x^2 + 3x + 5$
- G) $-x^2 + 5x + 5$
- H) $-x^2 + 3x + 3$
- J) $-x^2 + x + 3$
- K) none of the above

3) If $f(x) = \frac{2x}{x^2 + 1}$, find $f(-2)$. 3) _____

- A) 0
- B) $\frac{4}{3}$
- C) $\frac{4}{5}$
- D) $-\frac{4}{5}$
- E) -2

4) Determine the y -intercept of the graph of the following function: $y = 3x + 8$. 4) _____

- F) (0, 8)
- G) $\left(0, -\frac{8}{3}\right)$
- H) $\left(-\frac{8}{3}, 0\right)$
- J) (8, 0)
- K) none of the above

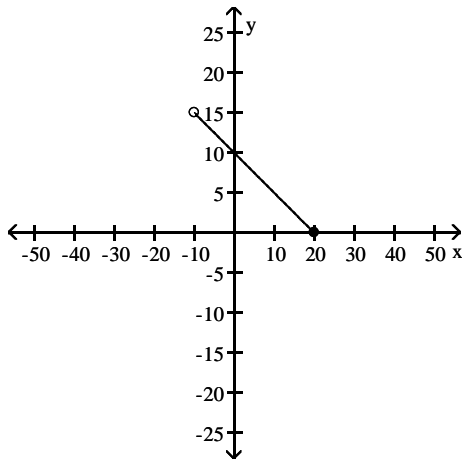
5) Find the point(s) of intersection of the pair of curves $y = x^3 - x$ and $y = 3x$. 5) _____

- A) (0, 0) and (1, 0)
- B) (0, 0), (2, 6), and (-2, -6)
- C) (0, 0), (4, 0) and (-4, 0)
- D) (0, 0)
- E) none of the above

Solve the problem.

6) Write the domain and range of the function using interval notation.

6) _____



F) domain: $[-10, 20]$

range: $(0, 15]$

H) domain: $[0, 15]$

range: $(-10, 20]$

G) domain: $(-10, 20]$

range: $[0, 15]$

J) domain: $(0, 15]$

range: $[-10, 20]$

7) To convert a temperature from degrees Celsius to degrees Fahrenheit, you multiply the temperature in degrees Celsius by 1.8 and then add 32 to the result. Express F as a linear function of c.

7) _____

A) $F(c) = 33.8c$

B) $F(c) = \frac{c - 32}{1.8}$

C) $F(c) = 1.8c + 32$

D) $F(c) = 1.8 + 32c$

Provide an appropriate response.

8) $\frac{x^3 + 4x^2 - 12x}{4x}$

8) _____

F) $5x^2 - 12x$

G) $\frac{x^2}{4} - 4x^2 - 12x$

H) $\frac{x^2}{4} + x - 3$

J) $x^3 - 11x$

K) $x^3 + 4x^2 - 3$

9) Solve for x: $1 - 4x - 4x^2 = 0$

9) _____

A) $-2 \pm 2\sqrt{2}$

B) $-\frac{1}{2} \pm \frac{\sqrt{2}}{2}$

C) $2 \pm 2\sqrt{2}$

D) $\frac{1}{2}$

E) $\frac{1}{2} \pm \frac{1\sqrt{2}}{2}$

Evaluate the expression. Write your answer without negative exponents.

10) -5^3

10) _____

F) 15

G) -15

H) 125

J) -125

Simplify the expression. Write your answer without negative exponents. Whenever an exponent is negative or zero, assume that the base is not zero.

11) $\frac{x^2}{x^{-7}}$ 11) _____

- A) $\frac{1}{x^9}$ B) $-x^5$ C) x^9 D) $\frac{1}{x^5}$

12) $(3x^6)^2$ 12) _____

- F) $3x^{12}$ G) $9x^6$ H) $9x^{12}$ J) $3x^8$

Factor the polynomial as the difference of two squares.

13) $x^2 - 16$ 13) _____

- A) $(x + 4)^2$ B) $(x + 4)(x - 4)$ C) $(x - 4)^2$ D) prime

Simplify the rational expression. Find all numbers that must be excluded from the domain of the simplified rational expression.

14) $\frac{2x^2 - 22x + 56}{x - 7}$ 14) _____

- F) $\frac{1}{x - 7}, x \neq 7$ G) $2x^2 - 30$, no restrictions on x

- H) $\frac{2x^2 - 22x + 56}{x - 7}, x \neq 7$ J) $2x - 8, x \neq 7$

Calculate.

15) $7 \cdot 8 - 8 \cdot 6^2 + 9(5 - 2)$ 15) _____

- A) -205 B) 27 C) -189 D) -2221

Solve.

16) $4x - (2x - 1) = 2$ 16) _____

- F) $\frac{1}{2}$ G) $-\frac{1}{6}$ H) $-\frac{1}{2}$ J) $\frac{1}{6}$

Simplify the radical expression by factoring out the largest perfect nth power. Assume that all variables are positive.

17) $\sqrt{98}$ 17) _____

- A) 9 B) 7 C) $49\sqrt{2}$ D) $7\sqrt{2}$

Solve.

18) $3x^2 - 24x = 0$ 18) _____

- F) 8 G) 12 H) 0, 8 J) 3, 8

19) $x^2 - 14x + 49 = 36$ 19) _____

- A) 1, -13 B) 43 C) 13, 1 D) 6, -6

Evaluate the expression without using a calculator.

20) $25^{1/2}$ 20) _____

- F) 2.5 G) 10 H) 20 J) 5

Perform the indicated operations. Write the resulting polynomial in standard form.

21) $(5x^5 + 18x^3 + 20) - (3x^5 - 9x^3 + 14)$ 21) _____
A) $2x^5 + 21x^3 + 34$ B) $2x^5 + 27x^3 + 34$ C) $2x^5 + 27x^3 + 6$ D) $35x^8$

22) $2x(7x - 9)$ 22) _____
F) $7x^2 - 18x$ G) $14x^2 - 18x$ H) $-4x^2$ J) $14x^2 - 9x$

23) $(x - 8y)(x - 5y)$ 23) _____
A) $x^2 - 16xy + 40y^2$ B) $x^2 - 13xy - 13y^2$
C) $x^2 - 13xy + 40y^2$ D) $x - 13xy + 40y$

24) $(9x - y)^2$ 24) _____
F) $81x^2 + y^2$ G) $81x^2 - 9xy + y^2$
H) $81x^2 - 18xy - 2y^2$ J) $81x^2 - 18xy + y^2$

Factor the polynomial by removing any common monomial factor.

25) $20x^3 + 8x^2 - 4x$ 25) _____
A) $4(5x^3 + 2x^2 - x)$ B) $4x(5x^2 + 2x - 4)$ C) $4x(5x^2 + 2x - 1)$ D) $4x(5x^2 + 2x + 1)$

Factor the trinomial, or state that the trinomial is prime.

26) $x^2 + 2x - 48$ 26) _____
F) $(x + 8)(x - 6)$ G) $(x - 8)(x + 1)$ H) $(x - 8)(x + 6)$ J) prime

Simplify the expression. Write your answer without negative exponents. Whenever an exponent is negative or zero, assume that the base is not zero.

27) $(2^4)^2$ 27) _____
A) 32 B) 256 C) 64 D) 16

Evaluate the expression. Write your answer without negative exponents.

28) 5^{-2} 28) _____
F) $\frac{1}{25}$ G) 25 H) $\frac{1}{10}$ J) -25

29) 2^0 29) _____
A) 0 B) -1 C) 2 D) 1

Simplify the expression. Write your answer without negative exponents. Whenever an exponent is negative or zero, assume that the base is not zero.

30) $x \cdot x^3$ 30) _____
F) x^3 G) x^4 H) $2x^4$ J) $2x^3$

31) $(-3x^2)(4x^7)$ 31) _____
A) $12x^9$ B) $-12x^{14}$ C) $-12x^9$ D) $12x^{14}$

Provide an appropriate response.

32) Factoring $(x + 1)(x - 3) + (x + 7)(x - 3)$ gives

32) _____

F) $2(x - 3)(x + 4)$

G) $(x + 1)(x + 7)(x - 3)$

H) $(x - 3)(2x - 2)$

J) $(x + 1)(x + 7)(x - 3)^2$

K) $2(x - 3)(x + 8)$

Solve.

33) $7x + 3 = 3x - 9$

33) _____

A) 3

B) $-\frac{9}{4}$

C) -12

D) -3