ALGEBRA REVIEW

MATH 365-Drost

Name: _____

Seat # _____

1. Which of the following is equivalent to $\dfrac{5-3a}{\dfrac{1}{2}+\dfrac{2}{a}}$, given the same domain $a \neq 0, -4$?

   (a) $\dfrac{10a-6a^2}{a+4}$ (b) $\dfrac{5a-3a^2}{a+2}$ (c) $\dfrac{10a-6a^2}{a+2}$ (d) $5a-3a^2$ (e) $\dfrac{20-7a-3a^2}{2}$

2. Which of the following is equivalent to $\dfrac{6z^5}{30z^{n+2}}$?

   (a) $\dfrac{1}{5}z^{7-n}$ (b) $\dfrac{1}{5}z^{n+7}$ (c) $\dfrac{1}{5}z^{3-n}$ (d) $\dfrac{1}{5}z^{n+3}$ (e) $\dfrac{1}{5}z^{\frac{5}{n+2}}$

3. Given that $\dfrac{1}{a}+\dfrac{1}{b}=4$ and $\dfrac{1}{a}-b=6$, then $a=$

   (a) $\dfrac{1}{10}$ (b) 10 (c) 5 (d) $\dfrac{1}{5}$ (e) -1

4. Simplify: $\sqrt{80}\sqrt{\dfrac{x}{5}}$

   (a) $4\sqrt{x}$ (b) $2\sqrt{x}$ (c) $4x$ (d) $16\sqrt{x}$ (e) $2x$

5. If $4^y = \dfrac{2^{\frac{1}{2}}}{\sqrt{8}}$, then $y=$

   (a) 2 (b) -2 (c) $\dfrac{-1}{2}$ (d) $\dfrac{1}{2}$ (e) 1

6. Find all values of x that satisfy $\mid 3-2x \mid \leq 5$
   (a) $\Re$ (b) $x \geq -1$ (c) $-1 \leq x \leq 4$ (d) ϕ (e) $-1 \geq x \geq 4$

7. What is the distance between the two points $(5,4)$ and $(-2,3)$?
   (a) $5\sqrt{2}$ (b) 10 (c) $\sqrt{58}$ (d) 8 (e) 5

8. Suppose that $x+y=-2$ and $x-2y=-8$. Then $x-y=$
   (a) 0 (b) 4 (c) -2 (d) -6 (e) -4

9. If $g(x)=(x-1)^2$ and $f(x)=3x+2$, then $(g \circ f)(x)=$
   (a) $9x^2+1$ (b) $9x^2+6x+1$ (c) $3x^2-6x+5$ (d) $3x^2+5$ (e) $6x^2+1$

10. A water tank is initially $\frac{1}{5}$ full. After adding 22 gallons of water, it is $\frac{3}{4}$ full. What is the capacity of the tank in gallons?
    (a) 50 (b) 40 (c) 30 (d) 25 (e) 60

11. The slope of the line having equation $x = -2y + 5$.

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

12. Simplify: $\sqrt{50} + \sqrt{8}$

(a) $2\sqrt{15}$ (b) 14 (c) $\sqrt{60}$ (d) $10\sqrt{2}$ (e) $7\sqrt{2}$

13. The domain of the function $f(x) = \dfrac{x^2 - x - 2}{x^2 - 2x - 3}$ is:

(a) $\Re, x \neq 3, -1$ (b) $\Re, x \neq 3$ (c) $\Re, x \neq 3, 2$ (d) $\Re, x \neq 2, 3, -1$ (e) $\Re$

14. Which of the following equals $(x^2 - 3x + 2)^2$?

(a) $x^4 + 9x^3 - 13x^2 + 12x + 4$ (b) $x^4 - 6x^3 - 5x^2 - 12x + 4$ (c) $x^4 + 9x^2 + 4$
(d) $x^4 - 6x^3 + 13x^2 - 12x + 4$ (e) $x^4 - 6x^3 + 10x^2 - 12x + 4$

15. The perimeter of a rectangle is eight times its width. If the length of the rectangle is 60 inches, what is its width in inches?

(a) 40 (b) 20 (c) 10 (d) 180 (e) 120

16. Which of the following is the result of simplifying $\dfrac{2x^2-7x-4}{3x^2-14x+8}$

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

17. Factor: $6x^2+13x+6$

(a) $(6x+6)(x+1)$ (b) $(3x+2)(2x+3)$ (c) $(2x+2)(3x+3)$

(d) $(3x+2)(3x+2)$ (e) $(6x+1)(x+6)$

18. Expand: $(e^x-e^{-x})(e^x+e^{-x})$

(a) $e^{2x}-e^{-2x}$ (b) $e^{x^2}-e^{-x^2}$ (c) 2 (d) $2e^x-2e^x$ (e) $e^{2x}+e^{-2x}$

19. Simplify: $\dfrac{x-1}{2}-\dfrac{x}{3}$

(a) $\dfrac{2x-3}{6}$ (b) $\dfrac{x-3}{6}$ (c) $\dfrac{-1}{6}$ (d) $\dfrac{x-1}{2}$ (e) $\dfrac{x-1}{6}$

20. Simplify: $64^{\frac{-2}{3}}$

(a) 512 (b) $\dfrac{1}{16}$ (c) 16 (d) $\dfrac{1}{512}$ (e) $-\dfrac{1}{512}$