$x^{\frac{25}{20}+\frac{4}{20}} = x^{\frac{29}{20}} = x \cdot x^{\frac{9}{20}}$

1. Simplify and write in simplest radical form: $x^{5/4} \cdot x^{1/5}$

[A] $\sqrt[29]{x^{20}}$ [B] x^4 [C] $\sqrt[4]{x}$ [D] $x\sqrt[20]{x^9}$

[1] _____

$x^{\frac{2}{7}}$

2. Write in fractional exponent form: $\left(\sqrt[7]{x}\right)^2$

[A] $x^{2/7}$ [B] $x^{-7/2}$ [C] $x^{7/2}$ [D] $x^{-2/7}$

[2] _____

$\frac{15}{4} = 3\frac{3}{4}$ $\frac{7}{4} = 1\frac{3}{4}$

3. Simplify: $\sqrt[4]{x^{15}y^7}$

[A] $x^3y^3\sqrt[4]{x^3y}$ [B] $x^{11}y^3\sqrt{xy}$ [C] $x^3y\sqrt{x^3y^3}$ [D] $x^3y\sqrt[4]{x^3y^3}$

[3] _____

$x+7 \le x^2 - 26x + 169$

$0 \le x^2 - 27x + 162$

4. Solve: $\sqrt{x+7} \le x-13$

[A] $-7 \le x \le 18$ [B] $x \le 18$ [C] $x \ge 13$ [D] $x \ge 18$

$0 \le (x-9)(x-18)$

[4] _____

5. Write the given expression in terms of i: $\sqrt{-72}$

[A] $-72i$ [B] $6\sqrt{2}i$ [C] $-6\sqrt{2}i$ [D] $\sqrt{-72}\,i$

$6\sqrt{2}\,i$

[5] _____

6. Solve: $x^2 - 4x + 8 = 0$

$x^2 - 4x + 4 = -8 + 4$

$(x-2)^2 = -4$

$x - 2 = \pm 2i$

[A] $2 + 2i,\ 2 - 2i$ [B] $2 + 4i,\ 2 - 4i$

[C] $-2 + 4i,\ -2 - 4i$ [D] $-2 + 2i,\ -2 - 2i$

[6] _____

7. Simplify: $(5+5i)+(6-3i)$

[A] $11+2i$ [B] $-1+8i$ [C] $45+15i$ [D] $11-2i$

[7] _____

$5 + 5i + 6 - 3i$

$11 + 2i$

8. Multiply: $(8-5i)(-7-8i)$

[A] $-96-29i$ [B] $-96-99i$ [C] $-16-99i$ [D] $-16-29i$

$-56-64i+35i+40i^2$

$-96-29i$

[8] _____

9. Divide: $\frac{4+i}{2+5i}$

[A] $\frac{13}{29}+\frac{18}{29}i$ [B] $-\frac{13}{29}-\frac{18}{29}i$ [C] $-\frac{13}{29}+\frac{18}{29}i$ [D] $\frac{13}{29}-\frac{18}{29}i$

$\frac{(4+i)(2-5i)}{(2+5i)(2-5i)}$ $\frac{8-20i+2i-5i^2}{4-25i^2}$ $\frac{13-18i}{29}$

[9] _____

10. Write $f(x) = (x-3)^2 - 4$ in quadratic form. Which of the following statements is true?

[A] The quadratic term is 5.

[B] The quadratic term is x^2.

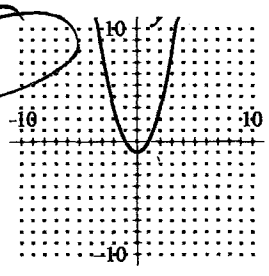
[C] The constant term is –4.

[D] The quadratic term is –4.

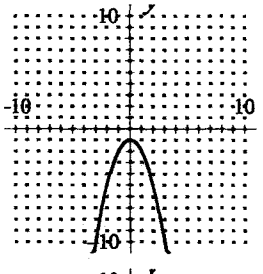
[10] _____

11. Graph: $y = x^2 - 1$

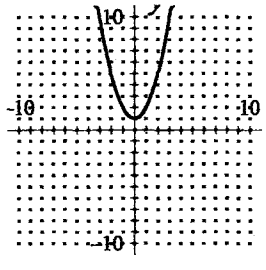
[A]



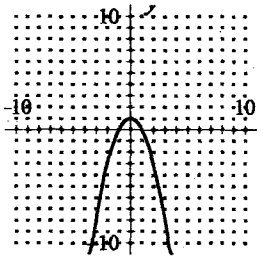
[B]



[C]



[D]



[11] _____

$(x-5)(x+4) = 0$

12. Solve for x by factoring. $x^2 - x - 20 = 0$

[A] $-4, 5$ [B] $-5, 4$ [C] $-4, -5$ [D] $4, 5$

[12] _____

13. Solve: $3x^2 + 8x - 3 = 0$ [A] $-\frac{1}{3}, 3$ [B] $2, -18$ [C] $\frac{1}{3}, -3$ [D] $1, -3$

$3x^2 - x + 9x - 3$

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

$(x+3)(3x-1) = 0$

[13] _____

14. Find the term that must be added to both sides of the equation so that the equation can be solved by the method of completing the square: $x^2 + 2x = 5$

[A] -5 [B] 2 [C] 1 [D] 4

$\left(\frac{2}{2}\right)^2 = 1$

[14] _____

15. Solve by the quadratic formula: $3x^2 + 4x - 4 = 0$

[A] $-2, \frac{3}{2}$ [B] $2, -\frac{3}{2}$ [C] $-2, \frac{2}{3}$ [D] $2, -\frac{2}{3}$

$x = \frac{-4 \pm \sqrt{16 - 4(3)(-4)}}{2(3)} = \frac{-4 \pm \sqrt{64}}{6} = \frac{-4 \pm 8}{6}$ [15] _____

16. Describe the nature of the roots of the equation: $3x^2 + 5x - 2 = 0$

[A] one real root and one imaginary root [B] one real root

[C] two real roots [D] two imaginary roots

$(5)^2 - 4(3)(-2)$

$25 + 24 = 49$

[16] _____

17. Which statement is true for the quadratic equation $0 = -2x^2 + 10x - 12$?

[A] The sum of the roots is -5. [B] The product of the roots is $-\frac{6}{5}$.

[C] The sum of the roots is $\frac{1}{6}$. [D] The product of the roots is 6.

[17] _____

$-2x^2 + 6x + 4x - 12$

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

$(-2x+4)(x-3) = 0$

$x = 2 \quad x = 3$