

$$1. (2, 6) \quad (B)$$

$$2. (x+8)(x-2) \quad (A)$$

$$3. 2x^2 = 16$$

$$x^2 = 8$$

$$x = \pm\sqrt{8} = \pm 2\sqrt{2} \quad (B)$$

$$4. \sqrt{162} = \sqrt{81 \cdot 2} = 9\sqrt{2} \quad (E)$$

$$5. -15 - 35i - 6i - 14i^2 = -1 - 41i \quad (B)$$

$$6. \pm \frac{3}{2}, \pm 2$$

$$\begin{array}{r} -1 \overline{) 2 \ -1 \ -5 \ -2} \\ \underline{-2 \ \ 3 \ \ 2} \end{array}$$

$$2 \ -3 \ -2 \ \boxed{0} \checkmark$$

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

$$(x+1)(2x+1)(x-2) \quad (A)$$

$$7. \pm 1, \pm 3, \pm 5, \pm 15$$

$$\begin{array}{r} -1 \overline{) 1 \ \ 3 \ -13 \ -15} \\ \underline{-1 \ -2 \ \ 15} \end{array}$$

$$1 \ \ 2 \ -15 \ \boxed{0} \checkmark$$

$$(x+1)(x^2+2x-15)$$

$$(x+1)(x+5)(x-3)$$

$$-1, 5, 3 \quad (C)$$

$$8. \pm 1, \pm 2, \pm 4$$

$$\begin{array}{r} \underline{1 \overline{) 1 \ \ 2 \ \ 1 \ \ 0 \ -4}} \\ \underline{1 \ \ 3 \ \ 4 \ \ 4} \end{array}$$

$$1 \ \ 3 \ \ 4 \ \ 4 \ \boxed{0} \checkmark$$

$$(x-1)(x^3+3x^2+4x+4)$$

$$\begin{array}{r} -2 \overline{) 1 \ \ 3 \ \ 4 \ \ 4} \\ \underline{-2 \ -2 \ -4} \end{array}$$

$$1 \ \ 1 \ \ 2 \ \boxed{0} \checkmark$$

$$(x-1)(x+2)(x^2+x+2)$$

$$1, -2 \quad (B)$$

$$9. (D)$$

$$10. y = a(x+3)^2 - 6$$

$$-31 = a(2+3)^2 - 6$$

$$-25 = 25a \quad a = -1 \quad (C)$$

$$11. \frac{2^{-2}x^6}{3^{-2}y^8} = \frac{3^2x^6}{2^2y^8} = \frac{9x^6}{4y^8} \quad (E)$$

$$12. f(-1) = 8 + 6 + 5 + 10 - 9 - 1 = 19 \quad (E)$$

$$13. \begin{array}{r} -1 \overline{) 3 \ \ 7 \ \ 0 \ \ 5} \\ \underline{-3 \ -4 \ \ 4} \end{array}$$

$$3 \ \ 4 \ -4 \ \ 9 \quad (E)$$

$$14. (C)$$

$$15. -\sqrt[3]{64} = -4 \quad (B)$$

$$16. (D)$$

$$17. \frac{5}{e^8} \cdot 4e^6 = \frac{20}{e^2} \quad (C)$$

$$18. \left(\frac{1}{2}\right)^x = 28 \text{ or } \frac{\log 28}{\log 1.5} \approx -4.801 \quad (B)$$

$$19. \log x^3 - \log 2 = \log \frac{x^3}{2} \quad (A)$$

$$20. \frac{50}{1+7e^3} \approx .3531 \quad (C)$$

$$21. \frac{(x-1)(x+4)(x+9)(x+8)}{(x+5)(x-2)(x-1)(x+9)} = \frac{x+4}{x-2} \quad (C)$$

$$22. 4^{\log_4(3x-13)} = 2x-7$$

$$3x-13 = 2x-7$$

$$x = 6 \quad (C)$$

$$23. 5^{x-2} = 29$$

$$\log_5 5^{x-2} = \log_5 29$$

$$x-2 = \log_5 29$$

$$x = 2 + \log_5 29 \approx 4.092 \quad (B)$$

$$24. \frac{(x-5)(x+2) \cdot (x-1)}{(x-5)(x-1)(x-2)(x+2)} = \frac{1}{x-2} \quad (B)$$

$$25. -12 = x^2 + 7x$$

$$0 = x^2 + 7x + 12$$

$$0 = (x+4)(x+3) \quad -4, -3 \quad (E)$$

$$26. \frac{x+4}{(x+3)(x+5)} - \frac{1}{(x+3)(x-3)}$$

$$(x+3)(x+5) \quad (x+3)(x-3)$$

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

$$\frac{x^2 - 15}{(x+3)^2(x-3)} \quad (C)$$

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

$$27. 18 - 2x = -12$$

$$30 = 2x$$

$$x = 15 \quad (A)$$

$$28. \frac{1}{25^{3/2}} = \frac{1}{(\sqrt{25})^3} = \frac{1}{5^3} = \frac{1}{125} \quad (B)$$