**Math 90 Final Examination Practice Problems**

1. Evaluate: $3^6$

2. Evaluate: $2 + 9 \bullet 3^2$

3. Evaluate: $141 - 5\left[34 - 3(2+5)\right]$

4. Evaluate: $\dfrac{2^3 + 3 \bullet 6}{18\left(\dfrac{5}{9}\right) + 3}$

5. Evaluate the expression $7x^2y + y^3$ for x = 4 and y = 2.

6. Solve: $x - 16 = 40$

7. Solve: $\dfrac{b}{6} = 2$

8. Is x = 3 a solution of the equation 2x +10 = 5x + 1?

9. Complete the table.

| x | $18-\dfrac{24}{x}$ |
|---|---|
| 2 | |
| 4 | |
| 12 | |

10. A stereo was on sale for $361.25. What did the stereo originally sell for if this was 85% of the original price?

11. Add: (-18) + 11 + (-7)

12. Subtract: $-\dfrac{4}{5} - \dfrac{1}{6}$

13. Multiply: (-2)(-8)(3)

14. Evaluate: $-8\left[(-2)3 - 4(1-3)^2\right]$

15. Let x = -2, y = -3,and z = 5.

Evaluate: $\frac{-3x+4y}{xz+4}$

16. How many terms are in the expression $2x^5 - 3x^3 + 7x^2 + 5x$?

17. Simplify: -9 (x – 3) + 2 (5x + 4)

18. Solve: 4(y + 1) = 5 (y – 1) + 12

19. Solve. $\frac{2}{3} = \frac{-4x}{5} + \frac{1}{6}$

20. Solve the inequality and graph its solution.

$-4 \le -2(x-1)$

21. Graph y = 4x + 2.

22. What is the slope of the line passing through (-2, -7) and (6, 3)?

23. What is the y-intercept of 2x + 5y = 25?

24. Write the equation of the line with slope $-\frac{2}{9}$ and y-intercept (0,-3).

25. Is (-4, -1) a solution to the system $\begin{cases} 3x+y=-13 \\ -2x=y-9 \end{cases}$?

In Problems 26 and 27, use the substitution method to solve each system.

26. $\begin{cases} y=5x \\ 3x+4y=-46 \end{cases}$

27. $\begin{cases} -x+3y=15 \\ 5x-9y=-31 \end{cases}$

In Problems 28 and 29, use the addition method to solve each system.

28. $\begin{cases} x+y=20 \\ x-y=-16 \end{cases}$

29. $\begin{cases} 3x+2y=1 \\ 2x+3y=-1 \end{cases}$

30. At the senior play the adult ticket cost $4 and a student ticket costs $2.50. If receipts of $373 were taken in for an audience of 112 people, how many students attended?

31. Graph y $\leq 2x+3$.

32. Use exponents to rewrite 2•2•x•x•x•y•y•y•y•y.

33. Evaluate: $5(3 + 2)^3$

34. Simplify: $\frac{16a^4a^{12}a}{8(a^3)^5}$

35. Simplify: $-5x^{-6}$

36. Write 237,000,000,000 in scientific notation.

37. Write $7.9\times10^{-6}$ in standard notation.

38. Find the degree of the polynomial $6x^4y^5 - 8x^3y^7 + 2xy^{10}$.

39. Add: $10x^3 - 6x^2 - 5x + 11$

$\underline{8x^3 + 7x^2 + 9x - 20}$

40. Subtract: $7x^2 - 3x - 1$

$\underline{\quad 8x^2 + 4x - 5}$

41. Multiply: (4b + 3)(4b – 2)

42. Divide: $\frac{6x^3+4x^2+3x+5}{x+1}$

43. Simplify: $-\sqrt{169}$

44. Simplify: $\sqrt[3]{64x^6y^7}$

45. Simplify: $\sqrt{\frac{108x^9y}{3xy}}$

46. Solve: $\sqrt{x-3}=5$

47. Simplify: $\sqrt{20x^3} - x\sqrt{45x} + \sqrt{80}$

48. Rationalize the denominator: $\frac{4}{\sqrt{10}}$

In Problems 49-51, factor each expression completely.

49. $7x^2 - 175$

50. $y^2 - 2y - 80$

51. $9x^2 + 39x + 42$

52. Solve by factoring: $7x^2 - 20x - 3 = 0$

53. Solve by the square-root method: $(x - 4)^2 = 18$

54. Solve by completing the square: $x^2 + 6x - 3 = 0$

55. Solve by using the quadratic formula: $2x^2 - 4x = 3$

56. A rectangular garden is 3 feet longer than twice its width. Find the dimensions of the garden if its area is 275 square feet.

57. Simplify: $\frac{x^2 - 64}{x^2 + 15x + 56}$

58. Divide and simplify: $\frac{x^2 + 8x + 12}{2x + 6} \div \frac{x^2 - 4}{5x + 15}$

59. Add: $\frac{2}{5x} + \frac{3}{4x^2}$

60. Subtract: $\frac{2y - 16}{y - 4} - \frac{3y}{y - 4}$

61. Solve for x: $\frac{x + 7}{3} - \frac{x + 1}{6} = \frac{5}{2}$

**Answers**

1) 729
2) 83
3) 76
4) 2
5) 232
6) 56
7) 12
8) yes
9) 6,12,16
10) $425
11) -14
12) -29/30
13) 48
14) 176
15) 1
16) 4
17) x + 35
18) - 3
19) – 15/24
20) $3 \geq x$ or $x \leq 3$ graph not displayed
21) graph not given
22) 5/4
23) (0, 5)
24) y = -2/9x – 3
25) no
26) (-2, -10)
27) (7, 22/3)
28) (2, 18)
29) (1, -1)
30) 62 seniors, 50 students
31) graph not given
32) $4x^3y^5$
33) 625
34) $2a^2$
35) $-5/x^6$ (-5 over $x^{6)}$
36) $2.37 \times 10^{11}$
37) 0.0000079
38) degree 11
39) $18x^3 + x^2 + 4x - 9$
40) $-x^2 - 7x + 4$
41) $16b^2 + 4b - 6$
42) $6x^2 - 2x + 5$
43) -13
44) $4x^2y^2\sqrt[3]{y}$
45) $6x^4$
46) 28
47) $-x\sqrt{5x} + 4\sqrt{5}$
48) $2\sqrt{10}/5$
49) 7(x + 5)(x – 5)
50) (y – 10)(y + 8)
51) 3(3x + 7)(x + 2)
52) 3, -1/7
53) $4 \pm 3\sqrt{2}$
54) $-3 \pm 2\sqrt{3}$
55) $\frac{2 \pm \sqrt{10}}{2}$
56) w = 11, l = 25
57) (x – 8) / (x + 7)
58) 5(x + 6) over 2(x – 2)
59) 8x + 15 over $20x^2$
60) (–y – 16) over (y – 4)
61) x = 2