Complete Solutions Manual

Finite Mathematics & Applied Calculus

SIXTH EDITION

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Solutions Section 0.1

Section 0.1

1. $2(4 + (-1))(2 \cdot -4)$
$= 2(3)(-8) = (6)(-8) = -48$

2. $3 + ([4 - 2] \cdot 9)$
$= 3 + (2\times 9) = 3 + 18 = 21$

3. `20/(3*4)-1`
$= \frac{20}{12} - 1 = \frac{5}{3} - 1 = \frac{2}{3}$

4. `2-(3*4)/10`
$= 2 - \frac{12}{10} = 2 - \frac{6}{5} = \frac{4}{5}$

5. $\frac{3 + ([3 + (-5)])}{3 - 2\times 2} = \frac{3 + (-2)}{3 - 4}$
$= \frac{1}{-1} = -1$

6. $\frac{12 - (1 - 4)}{2(5 - 1) \cdot 2 - 1} = \frac{12-(-3)}{16 - 1}$
$= \frac{15}{15} = 1$

7. `(2-5*(-1))/1-2*(-1)`
$= \frac{2 - 5\cdot(-1)}{1} - 2\cdot(-1)$
$= \frac{2+5}{1} + 2 = 7 + 2 = 9$

8. `2-5*(-1)/(1-2*(-1))`
$= 2 - \frac{5\cdot(-1)}{1 - 2\cdot(-1)}$
$= 2 - \frac{-5}{1 + 2} = 2 + \frac{5}{3} = \frac{11}{3}$

9. $2\cdot(-1)^2 / 2 = \frac{2\times(-1)^2}{2} = \frac{2\times 1}{2} = \frac{2}{2} = 1$

10. $2 + 4 \cdot 3^2 = 2 + 4\times 9 = 2 + 36 = 38$

11. $2\cdot 4^2 + 1 = 2\times 16 + 1 = 32 + 1 = 33$

12. $1-3\cdot(-2)^2\times 2 = 1 - 3\times 4\times 2$
$= 1 - 24 = -23$

13. `3^2+2^2+1`
$= 3^2 + 2^2 + 1 = 9 + 4 + 1 = 14$

14. `2^(2^2-2)` $= 2^{(2^2-2)} = 2^{4-2} = 2^2 = 4$

15. $\frac{3 - 2(-3)^2}{-6(4 - 1)^2} = \frac{3 - 2\times 9}{-6(3)^2} = \frac{3 - 18}{6\times 9}$
$= \frac{-15}{54} = \frac{5}{18}$

16. $\frac{1 - 2(1 - 4)^2}{2(5 - 1)^2 \cdot 2} = \frac{1 - 2(-3)^2}{2(4)^2\cdot 2} = \frac{1 - 2\times 9}{2\times 16\times 2}$
$= \frac{1-18}{64} = -\frac{17}{64}$

17. `10*(1+1/10)^3`
$= 10\left(1 + \frac{1}{10}\right)^3 = 10(1.1)^3$
$= 10\times 1.331 = 13.31$

18. `121/(1+1/10)^2`
$= \frac{121}{\left(1 + \frac{1}{10}\right)^2} = \frac{121}{1.1^2} = \frac{121}{1.21} = 100$

19. $3\left[\frac{-2\cdot 3^2}{-(4 - 1)^2}\right] = 3\left[\frac{-2\times 9}{-3^2}\right] = 3\left[\frac{-18}{-9}\right]$
$= 3\times 2 = 6$

20. $-\left[\frac{8(1 - 4)^2}{-9(5 - 1)^2}\right] = -\left[\frac{8(-3)^2}{-9(4)^2}\right]$
$= -\left[\frac{8\times 9}{-9\times 16}\right] = -\left(\frac{72}{-144}\right) = -\left(-\frac{1}{2}\right) = \frac{1}{2}$

21. $3\left[1 - \left(-\frac{1}{2}\right)^2\right]^2 + 1 = 3\left[1 - \frac{1}{4}\right]^2 + 1$
$= 3\left[\frac{3}{4}\right]^2 = 3\left[\frac{9}{16}\right] + 1 = \frac{27}{16} + 1 = \frac{43}{16}$

22. $3\left[\frac{1}{9} - \left(\frac{2}{3}\right)^2\right]^2 + 1 = 3\left[\frac{1}{9} - \frac{4}{9}\right]^2 + 1$
$= 3\left[\frac{-3}{9}\right]^2 + 1 = 3\left[\frac{-1}{3}\right]^2 + 1$
$= 3\left[\frac{1}{9}\right] + 1 = \frac{3}{9} + 1 = \frac{4}{3}$

23. `(1/2)^2-1/2^2`

Solutions Section 0.1

$= \left[\frac{1}{2}\right]^2 - \frac{1}{2^2} = \frac{1}{4} - \frac{1}{4} = 0$

24. `2/(1^2)-(2/1)^2`
$= \frac{2}{1^2} - \left[\frac{2}{1}\right]^2 = \frac{2}{1} - \frac{4}{1} = -2$

25. $3\times(2-5)$ = `3*(2-5)`

26. $4 + \frac{5}{9}$ = `4+5/9` or `4+(5/9)`

27. $\frac{3}{2-5}$ = `3/(2-5)`

Note `3/2-5` is wrong, since it corresponds to $\frac{3}{2} - 5$.

28. $\frac{4-1}{3}$ = `(4-1)/3`

29. $\frac{3-1}{8+6}$ = `(3-1)/(8+6)`

Note `3-1/8-6` is wrong, since it corresponds to $3 - \frac{1}{8} - 6$.

30. $3 + \frac{3}{2-9}$ = `3+3/(2-9)`

31. $3 - \frac{4+7}{8}$ = `3-(4+7)/8`

32. $\frac{4\times 2}{\left[\frac{2}{3}\right]}$ = `4*2/(2/3)` or `(4*2)/(2/3)`

33. $\frac{2}{3+x} - xy^2$ = `2/(3+x)-x*y^2`

34. $3+\frac{3+x}{xy}$ = `3+(3+x)/(x*y)`

35. $3.1x^3 - 4x^{-2} - \frac{60}{x^2-1}$
= `3.1x^3-4x^(-2)-60/(x^2-1)`

36. $2.1x^{-3} - x^{-1} + \frac{x^2-3}{2}$
= `2.1x^(-3)-x^(-1)+(x^2-3)/2`

37. $\frac{\left[\frac{2}{3}\right]}{5}$ = `(2/3)/5`

Note that we use only (round) parentheses in technology formulas, and not brackets.

38. $\frac{2}{\left[\frac{3}{5}\right]}$ = `2/(3/5)`

39. $3^{4-5}\times 6$ = `3^(4-5)*6`

Note that the entire exponent is in parentheses.

40. $\frac{2}{3+5^{7-9}}$ = `2/(3+5^(7-9))`

41. $3\left[1 + \frac{4}{100}\right]^{-3}$ = `3*(1+4/100)^(-3)`

Note that we use only (round) parentheses in technology formulas, and not brackets.

42. $3\left[\frac{1 + 4}{100}\right]^{-3}$ = `3((1+4)/100)^(-3)`

43. $3^{2x-1} + 4^x - 1$ = `3^(2*x-1)+4^x-1`

Note that the entire exponent of 3 is in parentheses.

44. $2^{x^2} - (2^{2x})^2$ = `2^(x^2)-(2^(2*x))^2`

45. 2^{2x^2-x+1} = `2^(2x^2-x+1)`

Note that the entire exponent is in parentheses.

46. $2^{2x^2-x} + 1$ = `2^(2x^2-x)+1`

47. $\frac{4e^{-2x}}{2-3e^{-2x}}$ = `4*e^(-2*x)/(2-3e^(-2*x))`
or `4(*e^(-2*x))/(2-3e^(-2*x))`
or `(4*e^(-2*x))/(2-3e^(-2*x))`

48. $\frac{e^{2x} + e^{-2x}}{e^{2x} - e^{-2x}}$
= `(e^(2*x)+e^(-2*x))/e^(2*x)-e^(-2*x))`

49. $3\left[1 - \left(-\frac{1}{2}\right)^2\right]^2 + 1$ = `3(1-(-1/2)^2)^2+1`

Note that we use only (round) parentheses in technology formulas, and not brackets.