

# 1.05 Variables and Substitution

*Basic Algebra: One Step at a Time. Page 27 - 30: #3, 4, 13, 20, 21, 22, 23, 24, 25, 27, 28.*

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p. 27-30:

3. Find the value of  $x^2 - 3xy - z^2$  if  $x = 5, y = 2, z = 3$

$$(\quad)^2 - 3(\quad)(\quad) - (\quad)^2$$

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

$$25 - 18 - 9$$

$$-2$$

4. Find the value of  $x^2 - 3xy - z^2$  if  $x = -5, y = -2, z = -3$

$$(\quad)^2 - 3(\quad)(\quad) - (\quad)^2$$

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

$$25 - 18 - 9$$

$$-2$$

13. Given that  $x = -2, y = -3, z = 4, w = -1$

Find the value of  $x^2 - y^2$

$$(-2)^2 - (-3)^2$$

$$4 - 9$$

$$-5$$

20. Given that  $x = -2, y = -3, z = 4, w = -1$

Find the value of  $-z^2 + w^2$

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

$$-16 + 1$$

$$-15$$

21. Given that  $x = -2, y = -3, z = 4, w = -1$

Find the value of  $x^2 + 3xz + z^2$

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

$$4 - 24 + 16$$

$$-4$$

22. Given that  $x = -2, y = -3, z = 4, w = -1$

Find the value of  $x^2 + yzw - w^2$

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

$$4 + 12 - 1$$

$$15$$

23. Given that  $x = -2, y = -3, z = 4, w = -1$

Find the value of  $\frac{xy - wz}{xw + yz}$

$$\frac{(-2)(-3) - (-1)(4)}{(-2)(-1) + (-3)(4)}$$

$$\frac{6 - (-4)}{2 + (-12)}$$

$$\frac{10}{-10}$$

$$-1$$

24. Given that  $x = -2, y = -3, z = 4, w = -1$

Find the value of  $\frac{y^2 + w^2}{xy - z}$

$$\frac{(-3)^2 + (-1)^2}{(-2)(-3) - 4}$$

$$\frac{9 + 1}{6 - 4}$$

$$\frac{10}{2}$$

$$5$$

25. Given that  $x = -2, y = -3, z = 4, w = -1$

Find the value of  $\frac{x^2 + z^2}{yz - x}$

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

$$\frac{4 + 16}{(-12) + 2}$$

$$\frac{20}{-10}$$

$$-2$$

27. Given that  $x = -2, y = -3, z = 4, w = -1$

Find the value of  $\frac{wx + yz}{y^2 + xz - w^2}$

$$\frac{(-1)(-2) + (-3)(4)}{(-3)^2 + (-2)(4) - (-1)^2}$$

$$\frac{2 - 12}{9 - 8 - 1}$$

$$\frac{-10}{0}$$

**DIVISION BY ZERO IS UNDEFINED!!**

**There is NO SOLUTION!!**

28. Given that  $x = -2, y = -3, z = 4, w = -1$

Find the value of  $\frac{y^2 + xz - w^2}{wx + yz}$

Note: Compare this exercise to #27. How is it similar? How is it different?

$$\frac{(-3)^2 + (-2)(4) - (-1)^2}{(-1)(-2) + (-3)(4)}$$

$$\frac{9 - 8 - 1}{2 - 12}$$

$$\frac{0}{-10}$$

$$\frac{0}{-10}$$

$$\frac{0}{-10}$$

$$0$$