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Prior knowledge of mathematics: Short answers

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Short answers to the test problems

Terms

1.   a)   14

      b) $\frac{1}{9}$

      c)   -16

      d)   4

2.   a) $3x + 13y + 3z$

      b) $18m + 6q$

      c) $10a - b$

      d) $60a^5b^3$

      e) $x^4 - y^4$

3.   a) $p^2 + 2pq + q^2$

      b) $4x^2 + 12xy + 9y^2$

      c) $x^2 - 2xy + y^2$

      d) $4a^2 - 12a^2x + 9a^2x^2$

      e) $a^2 - 4$

      f) $25x^2y^2 - 9x^2z^2$

4.   a) $5a^2(1 - 2a - 5a^2)$

      b) $3a(x - a)(x + 3a)$

5.   a) $\frac{7}{9b}$

      b) $\frac{1}{abc}$

      c) $\frac{2b}{a - b}$

      d) $\frac{p}{p - 1}$

e) -1

6. a) $\dfrac{20b^2y}{10a^2b^2x}$

 b) $\dfrac{25ab^2}{10a^2b^2x}$

7. a) $\dfrac{3x}{5}$

 b) $\dfrac{5x - 8y}{a}$

 c) $\dfrac{5x}{6}$

 d) $\dfrac{a^2 - c}{ab}$

 e) $\dfrac{a^2 + ab - b}{a^2 - b^2}$

 f) $\dfrac{t + 6}{3t}$

8. a) $\dfrac{5}{2}$

 b) $\dfrac{1}{6ab}$

 c) $-\dfrac{2d}{3}$

 d) $6q$

 e) $4b + 3q$

 f) $6a^2b^2c$

 g) $x + 2$

 h) $\dfrac{x}{c}$

 i) $\dfrac{1}{ab}$

 j) xy

 k) r

9. a) $a^{24}b$

 b) $a^{-10}b^{10}$

10. a) The expression is defined for all real numbers x.

 b) $x = -2$

 c) $x < -3$

 d) $-2 \leq x \leq 2$

Equations

11.   a) $x = \frac{11}{2}$

        b) $x = \frac{c - 2a}{1 + c}$

        c) $x = 9$

        d)   The equation has no solution.

Functions

12.   a) $f(0) = -4$
              $f(-4) = -16$

        b) $x = \frac{4}{3}$

13.   a) $f(-1) = -2$

        b) $f(2) \approx 2.8$

        c) $x_1 = -3$
              $x_2 = 1$

        d) $x_1 \approx -2.5$
              $x_2 \approx 0$

14.   a) $y = f(x) = -\frac{9}{4}x + \frac{1}{2}$

        b) $S_y \left(0 \,\middle|\, \frac{1}{2} \right)$

        c) $S_x \left(\frac{2}{9} \,\middle|\, 0 \right)$