

PRECALCULUS MPT

ANSWERS TO SAMPLE QUESTIONS

Sample questions are taken from the *Video Tutor* and [Video Tutor Guide](#), which is a set of DVD videos and its accompanying workbook that together cover the content of an intermediate algebra course. Each answer given below is followed by a reference to the specific video containing the detailed solution to the question. These videos also provide comprehensive instruction on the underlying concepts as well as related practice problems.

The *Video Tutor* and *Video Tutor Guide* are available in the First Floor Media Video area of the Capilano University Library (QA 154.2 M858 1992). If you have difficulty finding them, please ask Library staff for help. If you do not have a DVD player, you can borrow one at the Library.

Introduction to Algebra

1. $y = 2x - 6$ [Video 1.1.1](#)
2. False. In fact, $(a - b) - c = a - (b + c)$ [Video 1.1.2](#)
3. \$37.44 [Video 1.1.3](#)

Polynomials

4. $11x - 6y + 11$ [Video 1.4.2](#)
5. $-4u^6v^{12}w^{20}$ [Videos 1.4.3, 1.4.4](#)
6. $15x^3 + 22x^2 + 13x + 4$ [Videos 1.4.3, 1.4.4](#)
7. Quotient: $-\frac{3}{2}x^2 + \frac{3}{4}x + \frac{1}{8}$
Remainder: $\frac{55}{8}$ [Video 4.3.1](#)
Ignore reference to functions.
8. (a) $-3y(4y + 1)(4y - 1)$ or $3y(1 + 4y)(1 - 4y)$ [Videos 1.5.1, 1.5.2](#)
(b) $(3x + 1)(x + 1)$
(c) $(5y^2 + 2)(y + 2)(y - 2)$

Rational Expressions

9. (a) $\frac{3x-1}{x-5}$ [Video 1.6.1](#)

(b) $\frac{(x+1)^3}{(x-1)(x^2+1)}$ or $\frac{x^3+3x^2+3x+1}{x^3-x^2+x-1}$

(c) $\frac{x+3}{x-5}$

10. (a) 1 [Video 1.6.2](#)

(b) $\frac{9xy+9y+x}{3y(x+2)}$

(c) $\frac{x-3}{(x+1)(x+3)}$

11. (a) $\frac{2x}{(x+2)^2}$ [Video 1.6.3](#)

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

Radicals and Rational Exponents

12. (a) 7 [Video 1.7.1](#)

(b) -0.5

13. $2xy\sqrt[3]{x^2y}$ [Video 1.7.2](#)

14. $x+2\sqrt{xy}+y$ [Video 1.7.2](#)

15. (a) $\frac{5\sqrt[3]{49}}{14}$ [Video 1.7.2](#)

(b) $\frac{a+2\sqrt{3a}+3}{a-3}$

16. (a) 1

[Video 1.8.1](#)

(b) $\frac{(a^2 + b^2)^2}{a^2 b^2}$

(c) $\frac{1}{x^8}$

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

(e) $\frac{a^2 b^2}{a^2 + 3b^2}$

Equations and Inequalities

17. (a) $x = \frac{2}{3}$

[Videos 2.1.1–2.1.3](#)

(b) $x = \frac{7}{2}$

(c) $x = -\frac{1}{12}$

(d) $x = -4$

(e) $x = -6$

(f) $x = \frac{ab + bc}{2c^2 + ac + c - a^2}$

18. Width = 60 ft. Length = 150 ft.

[Videos 2.2.1 – 2.2.3](#)

19. 750 ml of 5% butterfat milk and 250 ml of 1% butterfat milk.

[Videos 2.2.1 – 2.2.3](#)

20. 10.25 km

[Videos 2.2.1 – 2.2.3](#)

21. (a) $x = 0$ or $x = -\frac{2}{3}$

[Videos 2.3.1 – 2.3.3](#)

(b) $x = 6$ or $x = 1$

(c) $x = 2$ or $x = -\frac{5}{3}$

(d) $x = \frac{7 \pm \sqrt{73}}{6}$

(e) $x = -9$

22. Dimensions: $25 - 5\sqrt{17}$ cm by $25 + 5\sqrt{17}$ cm.

[Video 2.3.4](#)

23. (a) $x = 1$ or $x = -\frac{1}{2}$

(b) No solutions

(c) $x = 8$

(d) $x = 1$, $x = -1$, $x = \frac{\sqrt{6}}{3}$, or $x = -\frac{\sqrt{6}}{3}$

[Videos 2.4.1, 2.4.2](#)

24. (a) $x < 17$

(b) $x = 6$ or $x = -9$

(c) $x < -\frac{4}{5}$ or $x > 4$

[Videos 2.5.1, 2.5.2,](#)
[2.6.1 & 2.6.2](#)

Geometry

25. $\sqrt{10}$

[Video 3.1.1](#)

26. $(x+1)^2 + (y-4)^2 = 9$

[Video 3.1.2](#)

27. Centre : $\left(\frac{5}{2}, -1\right)$, radius : $\frac{\sqrt{29}}{2}$

[Video 3.1.2](#)

28. $L_1: y = x$

$L_2: y = \frac{1}{3}x$

$L_3: y = -x$

[Videos 3.2.1 – 3.2.3](#)

29. $y = \frac{1}{3}x - \frac{1}{3}$

[Videos 3.2.1 – 3.2.3](#)

30. Line D is parallel. Line A is perpendicular.

[Videos 3.2.1 – 3.2.3](#)

31. Lines C and E are parallel. Line B is perpendicular.

[Videos 3.2.1 – 3.2.3](#)

32. Area = $\frac{\sqrt{3}}{4}x^2$

[Video 1.3.1](#)

33. Area = $\frac{3\sqrt{3}}{2}x^2$

[Video 1.3.1](#)