

## Practice Test Ch 4 Polynomial Equations

### Short Answer

- Given that one zero is  $-4$ , find all zeros of  $P(x) = x^3 + x^2 - 22x - 40$ .
- Find the number of complex roots of  $x^3 + 4x^2 + 3x = 0$ . Then find the roots.
- Solve  $5x^2 + 3x - 4 = 0$  by completing the square.
- Find the discriminant and describe the nature of the roots of  $3x^2 - 5x + 9 = 0$ . Then find the roots using the quadratic equation.
- Find  $(x^3 + 7x^2 - 16x - 112) \div (x + 4)$  by using synthetic division.
- Use the rational-root theorem to list the possible roots of  $12x^3 - 8x^2 - 3x + 2 = 0$ . Do not repeat answers.
- Solve  $\sqrt{x+2} - 2 = 7$
- Solve  $\frac{x+1}{3(x-2)} = \frac{5x}{6} + \frac{1}{x-2}$

*Solve.*

- $\frac{y}{2} - \frac{y}{3} < 7$
- $\sqrt{x-3} - \sqrt{x} = -1$
- $\sqrt{x+5} \geq 4$
- $\sqrt[4]{x+3} = 3$
- Australia's population is projected to grow throughout the first quarter-century of the new millennium.

Year	1989	1994	2000	2010	2020	2025
<b>Recorded and Projected Population (millions)</b>	16.09	18.08	18.7	21.15	22.72	23.50

- Write a model that relates the population as a function of the number of years since 1980.
  - Use the model to predict the population of Australia in the year 2005.
  - Use the model to predict what year Australia's population will exceed 25 million.
14. BONUS: There will be an application (word problem) involving either rational equations or radical equations. Look at the homework examples as a guide.

## Practice Test Ch 4 Polynomial Equations Answer Section

### SHORT ANSWER

1. ANS:

The roots of the equation are 5, -4, and -2.

PTS: 1

2. ANS:

Number of complex roots: 3

Roots: -1, -3, 0

PTS: 1

3. ANS:

$$x = \frac{-3 \pm \sqrt{89}}{10}$$

PTS: 1

4. ANS:

The discriminant is -83 and there are 2 imaginary roots. The roots are  $\frac{5 \pm i\sqrt{83}}{6}$ 

PTS: 1

5. ANS:

$$x^2 + 3x - 28$$

PTS: 1

6. ANS:

$$\pm 1, \pm 2 \pm 3 \pm 4 \pm 6 \pm 12 \pm \frac{1}{2} \pm \frac{3}{2}$$

PTS: 1

7. ANS:

$$x = 79$$

PTS: 1

8. ANS:

$$x = 2/5$$

PTS: 1

9. ANS:

$$y < 42$$

PTS: 1

10. ANS:

$$4$$

PTS: 1

11. ANS:

$$x \geq 11$$

PTS: 1

12. ANS:

$$x = 78$$

PTS: 1

13. ANS:

$$a. f(x) = 0.198x + 14.82$$

$$b. f(25) = 19.77 \text{ million}$$

$$c. 25 \approx f(51.4); \text{ during the year } 2031; (1980 + 51.4 = 2031.1)$$