

## Unit 3B Test Review

Factor the common factor out of each expression.

1)  $5r^4 - 50r^3 - 50r^2$

$$5r^2(r^2 - 10r - 10)$$

2)  $-28b^6 - 20b^4 - 16b^3$

$$-4b^3(7b^3 + 5b + 4)$$

Solve each equation by factoring.

3)  $r^2 + 2r - 3 = 0$

$$(r - 1)(r + 3) = 0$$

$$r = 1$$

$$r = -3$$

4)  $n^2 + 4n = 0$

$$n(n + 4) = 0$$

$$n = 0$$

$$n = -4$$

5)  $x^2 + 4x - 26 = -5$

$$x^2 + 4x - 21 = 0$$

$$(x + 7)(x - 3) = 0$$

$$x = -7$$

$$x = 3$$

6)  $r^2 - 3r = -2$

$$r^2 - 3r + 2 = 0$$

$$(r - 2)(r - 1) = 0$$

$$r = 2$$

$$r = 1$$

7)  $7a^2 + 22a + 3 = 0$

$$(7a + 1)(a + 3) = 0$$

$$a = -\frac{1}{7}$$

$$a = -3$$

8)  $2x^2 - 5x - 3 = 0$

$$(2x + 1)(x - 3) = 0$$

$$x = -\frac{1}{2}$$

$$x = 3$$

Solve each equation by taking square roots.

9)  $v^2 = \frac{81}{9}$

$$v^2 = 9$$

$$\sqrt{v^2} = \pm \sqrt{9}$$

$$v = \pm 3$$

10)  $v^2 + 1 = 101$

$$v^2 = 100$$

$$\sqrt{v^2} = \pm \sqrt{100}$$

$$v = \pm 10$$

$$11) 8x^2 + 4 = 84$$

$$\frac{8x^2}{8} = \frac{80}{8}$$

$$x^2 = 10$$

$$\sqrt{x^2} = \pm\sqrt{10}$$

$$x = \pm\sqrt{10}$$

$$13) 81b^2 + 1 = 2$$

$$\frac{81b^2}{81} = \frac{1}{81}$$

$$b^2 = \frac{1}{81}$$

$$\sqrt{b^2} = \pm\sqrt{\frac{1}{81}}$$

$$b = \pm\frac{1}{9}$$

$$12) 5n^2 + 1 = 96$$

$$\frac{5n^2}{5} = \frac{95}{5}$$

$$n^2 = 19$$

$$n = \pm\sqrt{19}$$

$$14) 10b^2 - 4 = 476$$

$$\frac{10b^2}{10} = \frac{480}{10}$$

$$b^2 = 48$$

$$\sqrt{b^2} = \pm\sqrt{48}$$

$$b = \pm 4\sqrt{3}$$

Solve each equation by completing the square.

$$15) m^2 - 8m - 84 = 0$$

$$m^2 - 8m + 16 = 84 + 16$$

$$(m-4)(m-4) = 100$$

$$(m-4)^2 = 100$$

$$m-4 = \pm 10$$

$$m = \pm 10 + 4$$

$$m = 14$$

$$m = -6$$

$$17) r^2 - 20r + 89 = -10$$

$$r^2 - 20r + 100 = -99 + 100$$

$$(r-10)^2 = 1$$

$$r = \pm 1 + 10$$

$$r = 11$$

$$r = 9$$

$$19) a^2 - 20a + 59 = 8$$

$$a^2 - 20a + 100 = -51 + 100$$

$$(a-10)^2 = -50$$

$$a-10 = \pm\sqrt{-50}$$

No solution

$$16) n^2 - 6n - 24 = 0$$

$$n^2 - 6n + 9 = 24 + 9$$

$$(n-3)(n-3) = 33$$

$$\sqrt{(n-3)^2} = \pm\sqrt{33}$$

$$n-3 = \pm\sqrt{33}$$

$$n = \pm\sqrt{33} + 3$$

$$18) x^2 - 8x - 87 = -7$$

$$x^2 - 8x + 16 = 80 + 16$$

$$(x-4)^2 = 96$$

$$x-4 = \pm\sqrt{96}$$

$$x = \pm\sqrt{96} + 4$$

$$x = \pm 4\sqrt{6} + 4$$

$$20) b^2 - 4b - 53 = -4$$

$$b^2 - 4b + 4 = 49 + 4$$

$$(b-2)^2 = 53$$

$$b-2 = \pm\sqrt{53}$$

$$b = \pm\sqrt{53} + 2$$