Answer Key

Algebra

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$$= x^4 - y^4$$

$$= (x^2)^2 - (y^2)^2$$

$$= (x^2+y^2)(x^2-y^2)$$

$$= (x^2+y^2)[(x+y)(x-y)]$$

$$\boxed{= (x^2+y^2)(x+y)(x-y)}$$

$$= 4x^3 + 4x^2 - 24x$$

$$= 4x(x^2 + x - 6)$$

$$\boxed{= 4x(x+3)(x-2)}$$

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$$x = \frac{(y^2 - 4y + 16)(y^2 - 16)}{y^3 + 64}$$

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

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

$$= \frac{\cancel{(y-2)^2} (y-4)\cancel{(y+4)}}{\cancel{(y+4)}\cancel{(y-2)^2}}$$

$$\boxed{x = y - 4}$$

8

$$= 8^{b+2} - 9(8)^{b+1} + 6(8)^{b} + 64(8)^{b-2}$$

$$= (8^{b})(8^{2}) - 9(8^{b})(8) + 6(8)^{b} + \frac{64(8)^{b}}{8^{2}}$$

$$= 8^{b}\left[8^{2} - (9)(8) + 6 + \frac{64}{8^{2}}\right]$$

$$= 8^{b}(-1)$$

$$\boxed{= -8^{b}}$$

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Solve for y:

$$3(2x - 3y = 10) \longrightarrow 6x - 9y = 30$$

$$-2(3x + 2y = 6) \longrightarrow -6x - 4y = -12$$

$$0 - 13y = 18$$

$$\boxed{y = -\frac{18}{13}}$$

$$= 4\sqrt{50y} - 4\sqrt{8y}$$

$$= 4\sqrt{(25)(2y)} - 4\sqrt{(4)(2y)}$$

$$= 4(5)\sqrt{2y} - 4(2)\sqrt{2y}$$

$$\boxed{= 12\sqrt{2y}}$$

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$$x + y = -6$$

$$x + z = 1$$

$$2z - 3y + 2x = 5$$

Using calulator:

$$\boxed{(x, y, z) = (-5, -1, 6)}$$

$$5x + 3y = 6$$
$$6x - 4y = -3$$

using calculator

$$\boxed{(x, y) = \left(\frac{15}{38}, \frac{51}{38}\right)}$$

$$= ax + ay - yb - bx$$

$$= (ax - bx) + (ay - yb)$$

$$= x(a - b) + y(a - b)$$

$$\boxed{= (x + y)(a - b)}$$

$$= 27 + x^3$$

$$= 3^3 + x^3$$

$$= (x+3)(x^2 - 3x + 3^2)$$

$$\boxed{= (x+3)(x^2 - 3x + 9)}$$

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$$\frac{1}{x} + \frac{x}{x+3} = 1$$

$$\left[\frac{1}{x} + \frac{x}{x+3} = 1\right](x)(x+3)$$

$$(x+3) + x^2(x+3) = (x)(x+3)$$

$$x+3 + x^3 + 3x^2 = x^2 + 3x$$

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

$$x^3 + 2x^2 - 2x + 3 = 0 \quad \text{(using calcu)}$$

$$\boxed{x = -3}$$

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$y^4 - 9y^2 = 0$

$y(y^3 - 9y) = 0$ (using calcu)

$$\boxed{\begin{aligned} y_1 &= 0 \\ y_2 &= 3 \\ y_3 &= -3 \end{aligned}}$$

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$y^2 - 5y + 6 = 0$ (using calcu)

$$\boxed{\begin{aligned} y_1 &= 3 \\ y_2 &= 2 \end{aligned}}$$

$$S - 8 < -10$$

$$S < -10 + 8$$

$$\boxed{S < -2}$$

The inverse function of $g(x) = 3x + 2$

$$y = 3x + 2$$

$$\boxed{x = \frac{y - 2}{3}}$$

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$f(x) = \sqrt[3]{x-3}$ and $h(x) = x^3$ find $h[f(x)]$

$f[h(x)] = \left(\sqrt[3]{x-3}\right)^3$

$\boxed{= x-3}$

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$f(x) = \sqrt[3]{x-3}$ and $h(x) = x^3$ find $f[h(x)]$

$\boxed{f[g(x)] = \sqrt[3]{x^3 - 3}}$

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$f(x) = \sqrt{x-2}$; Find $f(3x)$

$$\boxed{f(3x) = \sqrt{3x-2}}$$

For $f(x) = 3x - 2$; find $f(2)$

$f(2) = 6 - 2$

$\boxed{= 4}$

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$$x = \sqrt{7x - 10}$$

$$x^2 = \left(\sqrt{7x - 10}\right)^2$$

$$x^2 = 7x - 10$$

$$x^2 - 7x + 10 = 0$$

$$\boxed{\begin{aligned} x_1 &= 5 \\ x_2 &= 2 \end{aligned}}$$

$2x^2 - 3y^2 - 14 = 0$ and $y = x - 2$

$$2x^2 - 3(x-2)^2 - 14 = 0$$

$$2x^2 - 3(x^2 - 4x + 4) - 14 = 0$$

$$2x^2 - 3x^2 + 12x - 12 - 14 = 0$$

$$-x^2 + 12x - 26 = 0$$

$$\boxed{\begin{array}{l} x_1 = 9.1622 \approx 9 \\ x_2 = 2.8377 \approx 3 \end{array}}$$

Solving for y

using $x_1 = 9$

$$y = (9) - 2$$

$$\boxed{y_1 = 7}$$

Using $x_2 = 3$

$$y = (3) - 2$$

$$\boxed{y_2 = 1}$$

$$3x^2 + 8y^2 = 35 \quad \text{and} \quad 12y^2 - 4x^2 = 42$$

$$(3x^2 + 8y^2 = 35)4 \longrightarrow 12x^2 + 32y^2 = 140$$

$$(-4x^2 + 12y^2 = 42)3 \longrightarrow -12x^2 + 36y^2 = 126$$

$$0 + 68y^2 = 266$$

$$y^2 = \frac{133}{34}$$

$$y = \pm 1.9778$$

Solving for x;

$$3x^2 + 8\left(\frac{133}{34}\right) = 35$$

$$3x^2 = \frac{63}{17}$$

$$x^2 = \frac{21}{17}$$

$$x = \pm 1.1114$$

Hence;

$$\boxed{(x, y) \approx (\pm 1, \pm 2)}$$

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Solve for y: $y^2 - 3y - 10 = 0$

using calcu: $\boxed{\begin{aligned} y_1 &= 5 \\ y_2 &= -2 \end{aligned}}$

exponential LEAP ONLINE REVIEW

product of $(5+8i)$ and $(7-3i)$

using calcu: $\boxed{(59+41i)}$

$(3x-y)^5$ Find the 3rd term

$= 5C_2 (3x)^3 (-y)^2$

$= 10 (3)^3 (-1)^2 x^3 y^2$

$\boxed{= 270 x^3 y^2}$

constant term in expansion of $\left(3x^3 - \frac{1}{x^2}\right)^5$

$$= 5C_3 \left(3x^3\right)^2 \left(-\frac{1}{x^2}\right)^3$$

$$= 10 (3)^2 (-1)^3 (\cancel{x^6}) \left(\frac{1}{\cancel{x^6}}\right)$$

$$\boxed{= -90}$$