R U Ready 4 MTH 95?

Below are some of the skills you should have BEFORE entering MTH 95.

Do not use a calculator.

1) Simplify expressions:

a) $3(2x^2 - 3xy + y) - (y - x^2 + 2xy)$

b) $(3x - 5)(2x^2 - 6x + 7)$

c) $\frac{2x^3 - 4x^2 + 6x}{2x}$

d) $\frac{12a^5b^{-2}}{8a^{-3}b^7}$

e) $\sqrt[3]{16x^4y^6}$

2) Solve for x:

a) $x^2 - 5x - 14 = 0$

b) $2x^2 - x - 7 = 0$

c) $(x - 3)^2 + 2 = 5$

d) $\sqrt{x - 3} = 4$

3) Graph and label the vertex and intercepts:

$$y = x^2 - 2x - 8$$

4) A rectangular pool has a perimeter of 24 feet. Its length is 2 feet more than its width. Write and solve an algebraic equation to find the dimensions of the pool.

5) A rectangular pool has an area of 24 square feet. Its length is 2 feet more than its width. Write and solve an algebraic equation to find the dimensions of the pool.

6) Explain the difference between one foot, one square foot and one cubic foot. State a situation where each measurement would be applied.

7) Change 100 miles per hour to feet per second using dimensional analysis.

Solutions

1] a) $3(2x^2-3xy+y)-(y-x^2+2xy)$

$6x^2-9xy+3y-y+x^2-2xy$

$7x^2-11xy+2y$

b) $(3x-5)(2x^2-6x+7)$

$6x^3-18x^2+21x$

$-10x^2+30x-35$

$6x^3-28x^2+51x-35$

c) $\frac{2x^3}{2x}-\frac{4x^2}{2x}+\frac{6x}{2x}=x^2-2x+3$

d) $\frac{12a^5b^{-2}}{8a^{-3}b^7}=\frac{12a^5a^3}{8b^7b^2}=\frac{12a^8}{8b^9}=\frac{3a^8}{2b^9}$

e) $\sqrt[3]{8\cdot 2\cdot x^3\cdot x\cdot y^6}=2xy^2\sqrt[3]{2x}$

2] $x^2-5x-14=0$

$(x-7)(x+2)=0$

$x=7,-2$

b) $2x^2-x-7=0$

$a=2$, $b=-1$, $c=-7$

$\frac{1\pm\sqrt{1-4(2)(-7)}}{4}$

$x=\frac{1\pm\sqrt{57}}{4}$

2] c) $(x-3)^2 + 2 = 5$

$-2 \quad -2$

$\sqrt{(x-3)^2} = \sqrt{3}$ Square root both sides

$x - 3 = \pm\sqrt{3}$

$3 \quad 3$

$x = 3 \pm \sqrt{3}$

d) $\sqrt{x-3} = 4$ Square both sides

$(\sqrt{x-3})^2 = (4)^2$

$x - 3 = 16$

$3 \quad 3$

$x = 19$

3] $y = x^2 - 2x - 8$

Vertex $\frac{-B}{2A}$ $x = \frac{2}{2} = 1$

$y = (1)^2 - 2(1) - 8$

$1 - 2 - 8 = -9$

Vertex $(1, -9)$

x- int $x^2 - 2x - 8 = 0$

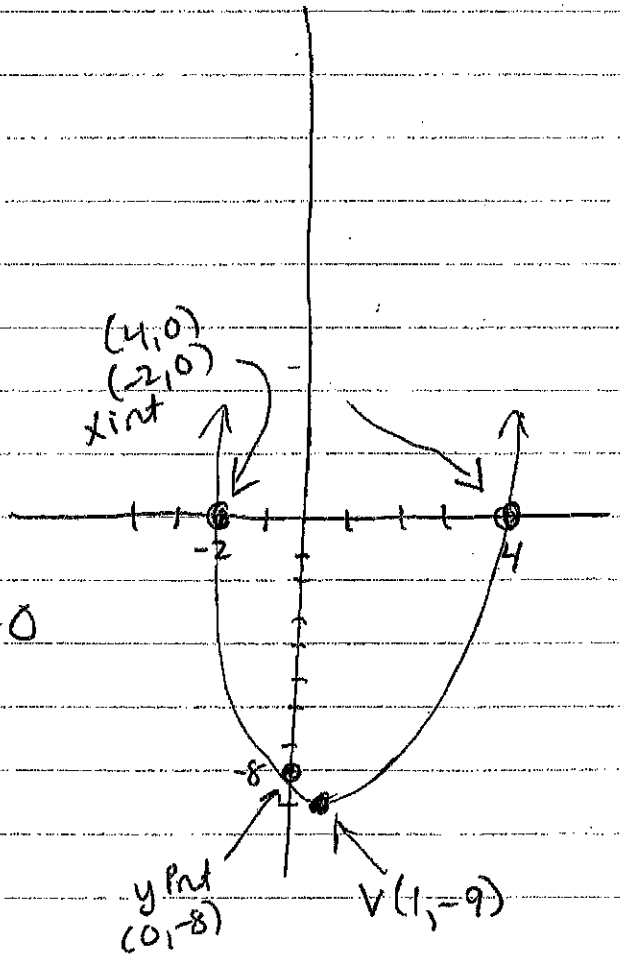
$(x-4)(x+2) = 0$

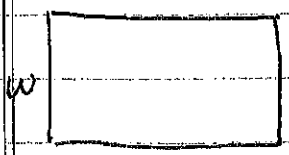
$x = 4, -2$

$(4,0)$ and $(-2,0)$

y-int $x = 0, \; y = -8$

$(0, -8)$



(4) 

$P = 2l + 2w$

$2(w+2) + 2w = 24$

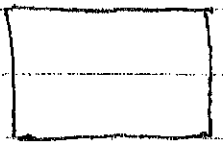
$2w + 4 + 2w = 24$

$4w + 4 = 24$

$4w = 20$

$w = 5$

width 5 feet
length 7 feet

(5) 

$A = lw$

$(w+2)w = 24$

$w^2 + 2w = 24$

-24

$w^2 + 2w - 24 = 0$

$(w+6)(w-4) = 0$

$w = -6, 4$

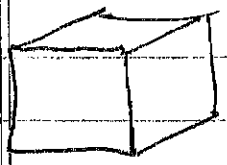
$w = 4$ feet (take pos)

width = 4 feet
length = 6 feet

(6) foot is one dimensional + measures linear units.
Square foot is 2 dimensional + measures square units.
Cubic foot is 3 dimensional + measures cubic units.

foot ← length of a pool

square foot ← area on the bottom of pool



cubic foot ← volume of water in pool

(7) $\frac{100 \text{ miles}}{\text{hour}} \times \frac{5280 \text{ ft}}{1 \text{ mile}} \times \frac{1 \text{ hr}}{60 \text{ min}} \times \frac{1 \text{ min}}{60 \text{ sec}} =$

$\frac{(100)(5280)}{(60)(60)} = 146.7 \text{ ft/sec}$