MAT 121 - [redacted]

1. $x^2 + 3x - 28 = 0$

$$1x^2 + 3x - 28 = 0$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{-3 \pm \sqrt{3^2 - 4(1)(-28)}}{2(1)}$$

$$x = \frac{-3 \pm \sqrt{9 - (-112)}}{2}$$

$$x = \frac{-3 \pm \sqrt{121}}{2}$$

$$x = \frac{-3 \pm 11}{2}$$

$$x = \frac{8}{2} = 4 \qquad x = \frac{-14}{2} = -7$$

$$\boxed{\begin{array}{l} x = 4 \\ x = -7 \end{array}}$$

MAT 121-[redacted]

2. $3.23x^2 + 21.32x - 50.44 = 0$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{-21.32 \pm \sqrt{21.32^2 - 4(3.23)(-50.44)}}{2(3.23)}$$

$$x = \frac{-21.32 \pm \sqrt{1106.2272}}{6.46}$$

$$\boxed{x = 1.8483 \qquad x = -8.4490.}$$

3. $121x^2 + 154x + 56 = 0$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{-154 \pm \sqrt{154^2 - 4(121)(56)}}{2(121)}$$

$$x = \frac{-154 \pm \sqrt{-3388}}{242}$$

$$\boxed{x = \frac{-7 \pm i\sqrt{7}}{11}}$$

MAT 121 - [redacted]

4. $bx^2 + 11\omega x - 6\pi = 0$

$$X = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$a = b$, $b = 11\omega$ & $c = -6\pi$

$$X = \frac{-11\omega + \sqrt{11\omega^2 - 4b(-6\pi)}}{2b}$$

$$\boxed{X = \frac{-11\omega \pm \sqrt{121\omega^2 + 24\pi b}}{2b}}$$

MAT 121- [redacted]

5. $x^2+3x-28=0$

$(x-4)(x+7)=0$

$x-4=0$
$+4$

$x=4$

$x+7=0$
-7

$x=-7$

$\boxed{x=4,-7}$

6. $30x^2+179x-140=0$

$(10x-7)(3x+20)=0$

$10x-7=0$
$+7\ +7$

$\frac{10x=7}{10}$

$x=\frac{7}{10}$

$\boxed{x=\frac{7}{10}}$

$3x+20=0$
$-20\ -20$

$\frac{3x=-20}{3x}$

$x=-\frac{20}{3}$

and

$\boxed{x=\frac{-20}{3}}$

MAT 121-[redacted]

7. $x^2-5x+5=0$

$\quad\quad -5 \quad -5$

$$x^2-5x=-5$$

$$\left(-5\cdot\frac{1}{2}\right)^2=\frac{25}{4}$$

$$x^2-5x+\frac{25}{4}=-5+\frac{25}{4}$$

$$\left(x-\frac{5}{2}\right)^2=\frac{5}{4}$$

$$x-\frac{5}{2}=\pm\sqrt{\frac{5}{4}}$$

$$x=\frac{5}{2}\pm\sqrt{\frac{5}{4}}$$

$$\boxed{\begin{array}{c} x=\frac{5}{2}+\frac{\sqrt{5}}{2} \\ \text{and} \\ x=\frac{5}{2}-\frac{\sqrt{5}}{2} \end{array}}$$

MAT 121-[redacted]

8. $x^2-6x-11=0$

$\quad\quad +11 \quad +11$

$x^2-6x=11$

$\left(-6\cdot\frac{1}{2}\right)^2=9$

$x^2-6x+9=11+9$

$(x-3)^2=20$

$x-3=\pm\sqrt{20}$

$x-3=\pm 2\sqrt{5}$

$x=3\pm 2\sqrt{5}$

$x=3+2\sqrt{5}$
and
$x=3-2\sqrt{5}$

MAT 121- [redacted]

9. $\dfrac{5x^2+2x+11=0}{5}$

$$\frac{5}{5}x^2+\frac{2}{5}x+\frac{11}{5}=\frac{0}{5}$$

$$x^2+\frac{2}{5}x+\frac{11}{5}=0$$

$$x^2+\frac{2}{5}x=-\frac{11}{5}$$

$$\left(\frac{2}{5}\cdot\frac{1}{2}\right)^2=\frac{1}{25}$$

$$x^2+\frac{2}{5}x+\frac{1}{25}=-\frac{11}{5}+\frac{1}{25}$$

$$\left(x+\frac{1}{5}\right)^2=-\frac{11}{5}+\frac{1}{25}$$

$$\left(x+\frac{1}{5}\right)^2=-\frac{54}{25}$$

$$x+\frac{1}{5}=\pm\sqrt{-\frac{54}{25}}$$

$$x+\frac{1}{5}=\pm\frac{3\sqrt{6}i}{5}$$

$$x=-\frac{1}{5}\pm3\frac{\sqrt{6}i}{5}$$

$$x=-\frac{1}{5}+3\frac{\sqrt{6}i}{5}$$

and

$$x=-\frac{1}{5}-3\frac{\sqrt{6}i}{5}.$$

MAT 12 [redacted]

10. $$\frac{3x^2-4x-4=0}{3}$$

$$\frac{3}{3}x^2-\frac{4}{3}x-\frac{4}{3}=\frac{0}{3}$$

$$x^2-\frac{4}{3}x=\frac{4}{3}$$

$$\left(-\frac{4}{3}\cdot\frac{1}{2}\right)^2=\frac{4}{9}$$

$$x^2-\frac{4}{3}x+\frac{4}{9}=\frac{4}{3}+\frac{4}{9}$$

$$\left(x-\frac{2}{3}\right)^2=\frac{4}{3}+\frac{4}{9}$$

$$\left(x-\frac{2}{3}\right)^2=\frac{16}{9}$$

$$x-\frac{2}{3}=\pm\sqrt{\frac{16}{9}}$$

$$x-\frac{2}{3}=\pm\frac{4}{3}$$

$$x=\frac{2}{3}\pm\frac{4}{3}$$

$$x=\frac{2}{3}\pm\frac{4}{3}$$

$$x=\frac{2}{3}+\frac{4}{3}=\frac{6}{3}=2$$

$$x=\frac{2}{3}-\frac{4}{3}=-\frac{2}{3}$$

$$\boxed{\begin{gathered}x=2\\ \text{and}\\ x=-\frac{2}{3}\end{gathered}}$$

11.

The best advantage of the quadratic equation is that it will always work giving you an answer regardless of how nasty the answer looks. It will always, reveal all solutions real and imaginary. It is a fairly simple and straight forward method. However, the down side to the quadratic equation is that one must memorize the formula ax^2+bx+c=0. It also, can take a long time to calculate. With that in mind, the longer a process is the more likelihood of a mistake being made.

Like the quadratic equation, completing the square allows you to solve any quadratic equation. Although, completing the square can become very complex. It is an equation that is multistep, allowing more room for a mistake to be made.

We also are given the factoring method which is fast and easy to use. Factoring is simple and can easily figure x-intercepts. The factoring method quickly allows you to separate a quadratic equation into two linear equations, which is then easier to solve. There is however, a very big down fall to the factoring method, which is it does not work work so neatly for all equations.