121 §3.1 ALTERNATE WRITEUPS for some of them:

Methods

(11) $x^2 - 3x$

$-\frac{b}{2a} = h = \frac{3}{2}$

$f(-\frac{b}{2a}) = -\frac{9}{4} = K$

previous work

$a(x-h)^2 + K$

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

(13) $2x^2 - 12x + 22$

$\left(-\frac{b}{2a}, f(-\frac{b}{2a})\right) = (3, 4)$

$f(x) = 2(x-3)^2 + 4$

(15) $f(x) = -3x^2 + 6x - 3$

$\left(-\frac{b}{2a}, f(-\frac{b}{2a})\right) = (1, 0)$

$f(x) = \boxed{\underset{a}{-3}(x - \underset{h}{1})^2 + \underset{K}{0}}$

See 1st version where I found $-\frac{b}{2a}$ & $f(-\frac{b}{2a})$, already

This stuff, here, is to show the check/cheat for completing the square & how to write 'em

(19) $-2x^2 + 3x - 1 = f(x) = \boxed{\underset{a}{-2}\,(x - \underset{h}{\tfrac{3}{4}}) + \underset{k}{\tfrac{1}{8}}}$

$-\frac{b}{2a} = \frac{3}{4} = h$

$f(-\frac{b}{2a}) = \frac{1}{8} = K$

121 §3.1 Alternate take

(78) $-3z^2-5 > 2z$

$-3z^2-2z-5 > 0$

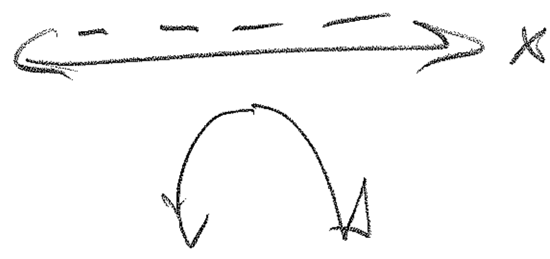
$a=-3,\ b=-2,\ c=-5$

$b^2-4ac = (-2)^2-4(-3)(-5)$

$= 4-60$

$= -56$ No real zeros

opens down
want > 0



Always < 0

On the original, I multiplied by -1 because I liked $3z^2+2z+5<0$ more than $-3z^2-2z-5>0$ and they're equivalent.

WANT >0 and it will never be >0 !

$\boxed{\emptyset}$

(85) $t^2 \le 16$

$t^2-16 \le 0$

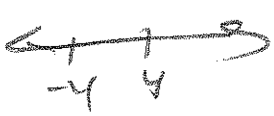
$a=1,\ b=0,\ c=-16$

$b^2-4ac = 0^2-4(1)(-16)$

$= 64$

$t = \dfrac{0\pm\sqrt{64}}{2} = \pm\frac{8}{2} = \pm 4$

You can always clobber a quadratic with the quadratic formula.

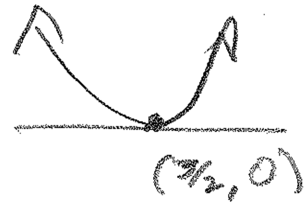


etc.

(121) §3.1 Alternate Methods

(89) $4z^2-12z+9>0$

$a=4,\ b=-12,\ c=9$



$b^2-4ac=(-12)^2-4(4)(9)$
$\quad=144-144=0$

$$x=\frac{12\pm\sqrt{0}}{2(4)}=\frac{12}{8}=\frac{3}{2}$$

We say that <u>$x=\frac{3}{2}$ is a repeated root.</u>

Later, we'll say it's a root of multiplicity 2

Approaching this problem in this way, we'd factor it thusly:

$$4z^2-12z+9=4\left(z-\tfrac{3}{2}\right)\left(z-\tfrac{3}{2}\right)$$

$$\text{OR just } 4\left(z-\tfrac{3}{2}\right)^2.$$

You can make like you factored it by

$$2\left(z-\tfrac{3}{2}\right)(2)\left(z-\tfrac{3}{2}\right)$$
$$=(2z-3)(2z-3)=(2z-3)^2\ !$$

I recognized, right away that it was a perfect square trinomial. <u>You</u> can recognize it, OR just when $b^2-4ac=0$, you know it's one.