ⓐ $f(x) = x^2 + 10x + 20$

$= (x^2 + 10x + 25) - 25 + 20$

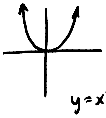
$= (x+5)^2 - 5$

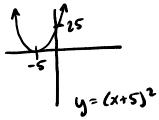
To find x-intercepts we solve: $(x+5)^2 - 5 = 0$

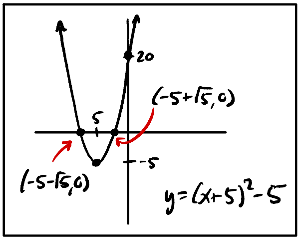
$(x+5)^2 = 5$

$x+5 = \pm\sqrt{5}$

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







ⓑ $g(x) = x^2 - 6x - 5$

$= (x^2 - 6x + 9) - 9 - 5$

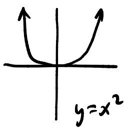
$= (x-3)^2 - 14$

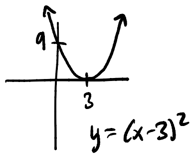
To find x-intercepts, we solve $(x-3)^2 - 14 = 0$

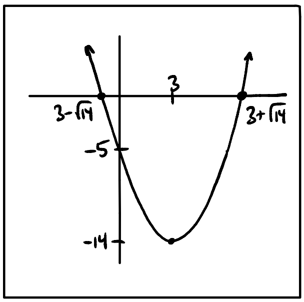
$(x-3)^2 = 14$

$x-3 = \pm\sqrt{14}$

$x = 3 \pm \sqrt{14}$







ⓒ $h(x) = 3x^2 - 7x - 10$

$= 3\left(x^2 - \frac{7}{3}x + \frac{49}{36}\right) - \frac{3 \cdot 49}{36} - 10$

$= 3\left(x - \frac{7}{6}\right)^2 - \frac{169}{12}$

To find x-intercepts, we solve

$3\left(x-\frac{7}{6}\right)^2 - \frac{169}{12} = 0$

$3\left(x-\frac{7}{6}\right)^2 = \frac{169}{12}$

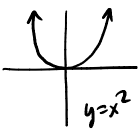
$\left(x-\frac{7}{6}\right)^2 = \frac{169}{36}$

$x - \frac{7}{6} = \pm\frac{13}{6}$

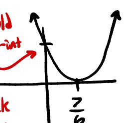
$x = \frac{7}{6} \pm \frac{13}{6}$

$x = \frac{7 \pm 13}{6} = \frac{20}{6}$ or $\frac{-6}{6}$

$\boxed{x = \frac{10}{3} \text{ or } -1}$



We could find y-int here, but a slick trick can be pulled if we wait for a moment.



to find y-int for final graph: we could find $3\left(0-\frac{7}{6}\right)^2 - \frac{169}{12}$

$= \frac{3 \cdot 49}{36} - \frac{169}{12}$

$= \frac{49}{12} - \frac{169}{12} = \frac{-120}{12} = \boxed{-10}$

But it is way easier if we use the original form for h(x):

$3 \cdot 0^2 - 7 \cdot 0 - 10 = \boxed{-10}$