

# Collingwood 39

Andre Ye

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**7.20a Problem:** Solve for  $t$ :  $s = 2(t - 1)^2 + 1$

**7.20a Solution:** Making algebraic manipulations:

$$\begin{aligned}2(t - 1)^2 + 1 &= s \\2(t - 1)^2 &= s - 1 \\(t - 1)^2 &= \frac{s - 1}{2} \\t - 1 &= \pm\sqrt{\frac{s - 1}{2}} \\t &= \pm\sqrt{\frac{s - 1}{2}} + 1\end{aligned}$$

Therefore,  $\boxed{t = \pm\sqrt{\frac{s-1}{2}} + 1}$ .

**7.20b Problem:** Solve for  $x$ :  $y = x^2 + 2x + 3$

**7.20b Solution:** Making algebraic manipulations:

$$\begin{aligned}x^2 + 2x + 3 &= y \\x^2 + 2x + 1 &= y - 2 \\(x + 1)^2 &= y - 2 \\x + 1 &= \pm\sqrt{y - 2} \\x &= \pm\sqrt{y - 2} - 1\end{aligned}$$

Therefore,  $\boxed{x = \pm\sqrt{y-2} - 1}$ .