

1.4 u-substitution

$$6(s+8)^2 - 35(s+8) - 6 = 0$$

$u = s+8$ $6u^2 - 35u - 6 = 0$ $\begin{matrix} 36 \\ -36+1 \end{matrix}$

$$6u^2 - 36u + u - 6 = 0$$

$$6u(u-6) + 1(u-6) = 0$$

$$(u-6)(6u+1) = 0$$

$u-6=0$	$6u+1=0$
$u=6$	$6u=-1$
	$u=-\frac{1}{6}$
$s+8=6$	$s+8=-\frac{1}{6}$
$s=-2$	$s=-\frac{49}{6}$

$-\frac{1}{6} - \frac{49}{6}$

$$x + \sqrt{x} - 90 = 0$$

$u = \sqrt{x}$

$$u^2 + u - 90 = 0$$

$$(u-9)(u+10) = 0$$

$u = 9, -10$

$\sqrt{x} = 9$ $\sqrt{x} = -10$

$x = 81$

$\sqrt{x^2} = \sqrt{100}$
 $x = \pm 10$

$$t^{\frac{1}{2}} - 6t^{\frac{1}{4}} + 9 = 0$$

$u = t^{\frac{1}{4}}$

$$u^2 - 6u + 9 = 0$$

$$(u-3)(u-3) = 0$$

$u = 3$

$$(t^{\frac{1}{4}})^4 = 3^4$$

$t = 81$

$$2x^{\frac{1}{2}} - 7x^{\frac{1}{4}} + 4 = 0$$

$$2u^2 - 7u + 4 = 0$$

$$u = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{7 \pm \sqrt{49 - 4(2)(4)}}{4}$$

$$u = \frac{7 \pm \sqrt{17}}{4}$$

$$x^{\frac{1}{4}} = \frac{7 + \sqrt{17}}{4}$$

$$x^{\frac{1}{4}} = \frac{7 - \sqrt{17}}{4}$$

$$x = \left(\frac{7 + \sqrt{17}}{4}\right)^4$$

$$x = \left(\frac{7 - \sqrt{17}}{4}\right)^4$$

$$\left(\frac{v}{v+3}\right)^2 - \frac{v}{v+3} - 20 = 0$$

$$u^2 - u - 20 = 0$$

$$(u-5)(u+4) = 0$$

$u = 5, -4$

$u = \frac{v}{v+3}$

$\frac{v}{v+3} = 5$	$\frac{v}{v+3} = -4$
$v = 5v + 15$	$v = -4v - 12$
$-4v = 15$	$5v = -12$
$v = -\frac{15}{4}$	$v = -\frac{12}{5}$