

7. $(x^2)^2 = x^4$
 $x^4 - 5x^2 + 4 = 0$

U-SUBSTITUTION

① LET THE VARIABLE PART OF MIDDLE BE u AND VARIABLE PART OF FIRST BE u^2

$u^2 - 5u + 4 = 0$

② (PSD) $(u-1)(u-4) = 0$

$u-1=0$ $u-4=0$

$u=1$ $u=4$

$x^2=1$ $x^2=4$

$x = \pm\sqrt{1}$ $x = \pm\sqrt{4}$

$x = \pm 1$ $x = \pm 2$

② SOLVE FOR u

③ PLUG $u = \underline{\hspace{2cm}}$ BACK IN AND SOLVE FOR x

8. $x^{\frac{2}{3}} + 6x^{\frac{1}{3}} - 7 = 0$

① $u^2 + 6u - 7 = 0$

② (PSD) $(u+7)(u-1) = 0$

$u+7=0$ $u-1=0$
 $u=-7$ $u=1$

$(x^{\frac{1}{3}})^3 = x^{\frac{2}{3}}$

③ $x^{\frac{1}{3}} = -7$ $x^{\frac{1}{3}} = 1$

$(x^{\frac{1}{3}})^3 = (-7)^3$ $(x^{\frac{1}{3}})^3 = 1^3$

$x = -343$

$x = 1$

$\frac{649}{343}$

9. $(x^2 - 2x)^2 - 23(x^2 - 2x) + 120 = 0$

① $u^2 - 23u + 120 = 0$

② (PSD) $(u-8)(u-15) = 0$

$u-8=0$ $u-15=0$

$u=8$ $u=15$

③ $x^2 - 2x = 8$ $x^2 - 2x = 15$

$x^2 - 2x - 8 = 0$ $x^2 - 2x - 15 = 0$

(PSD) $(x-4)(x+2) = 0$ $(x-5)(x+3) = 0$

$x-4=0$ $x+2=0$ $x-5=0$ $x+3=0$

$x=4$ $x=-2$ $x=5$ $x=-3$