Find each, without a calculator:

$a^{\frac{1}{n}} = \sqrt[n]{a}$

$a^{\frac{m}{n}} = \sqrt[n]{a^m} = (\sqrt[n]{a})^m$

$25^{\frac{1}{2}} = \sqrt{25} = 5$

$-(9^{\frac{3}{2}}) = -(\sqrt{9})^3 = -27$

$4^{\frac{3}{2}} = (\sqrt{4})^3 = 8$

$(-16)^{\frac{1}{4}} = \sqrt[4]{-16}$ DNE

$-16^{\frac{1}{4}} = -\sqrt[4]{16} = -2$

$-3^2 = -(3^2) = -9$

$(-3)^2 = (-3)(-3) = 9$

Solve $x^3+5x^2=6x$

$x^3+5x^2-6x=0$

$x(x^2+5x-6)=0$

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

$x=0,-6,1$

$$x^3+x^2=25x+25$$

$$x^3+x^2-25x-25=0$$

$$x^2(x+1)-25(x+1)=0$$

$$(x+1)(x^2-25)=0$$

$$(x+1)(x-5)(x+5)=0$$

$$x=-1,-5,5$$

$f(x) = x^2 - 3x + 1 \quad g(x) = 2x - 5$

$(f \circ g)(x) = f[g(x)]$

$= f(2x - 5)$

$= (2x - 5)^2 - 3(2x - 5) + 1$

$\vdots$

$= 4x^2 - 26x + 41$

$f(x) = x^2 - 3x + 1 \quad g(x) = 2x - 5$

Find $(g \circ f)(x)$

$(g \circ f)(x) = 2x^2 - 6x - 3$

Solve $x^2+6x+34=0$, allowing complex numbers.

$$x=\frac{-b\pm\sqrt{b^2-4ac}}{2a}$$

$x^2+4x+11=0$

$x=-2\pm i\sqrt{7}$

Graph $g(x) = x^2 + 4x - 1$

x	y
-2	-5
-1	-4