EXERCISE 3D

1d. $y+3=0 \Rightarrow y=-3$
$y = 2x^2+5x-6$

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

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

$(2x-1)(x+3)=0$

$x=\frac{1}{2}$ $x=-3$

$y=-3$ $y=-3$

$(\frac{1}{2},-3)$ $(-3,-3)$

2e. $3x+y-1=0 \Rightarrow y=-3x+1$
$y=6+10x-6x^2$

$-3x+1=6+10x-6x^2$

$6x^2-13x-5=0$

$(3x+1)(2x-5)=0$

$x=-\frac{1}{3}$ $x=\frac{5}{2}$

$y=2$ $y=-3(\frac{5}{2})+1$

$(-\frac{1}{3},2)$ $=-\frac{15}{2}+1=-\frac{13}{2}$

$(\frac{5}{2},-\frac{13}{2})$

3b. $y=-2x-7$
$y=x^2+4x+2$

$-2x-7=x^2+4x+2$

$x^2+6x+9=0$

$(x+3)^2=0$

$x=-3$ $(-3,-1)$

$y=-1$

4b. $y=x^2-x$
$y=x-1$

$x^2-x=x-1$

$x^2-2x+1=0$

$(x-1)^2=0$

$x=1, y=0$

$(1,0)$

5b. $y=x^2+5x+18$
$y=-3x+6$

$x^2+5x+18=-3x+6$

$x^2+8x+12=0$

$(x+6)(x+2)=0$

$x=-6$ $x=-2$

$y=24$ $y=12$

$(-6,24)$ $(-2,12)$

6b. $y=x+5$
$y=2x^2-3x+7$

$x+5=2x^2-3x+7$

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

$x^2-2x+1=0$

$(x-1)^2=0$

$x=1, y=6$

$(1,6)$

7a. $y=x^2+5x+1$
$y=x^2+3x+11$

$x^2+5x+1=x^2+3x+11$

$2x-10=0$

$x=5, y=5^2+5.5+1$

$=51$

$(5,51)$

b. $y=x^2-3x-7$
$y=x^2+x+1$

$x^2-3x-7=x^2+x+1$

$4x+8=0$

$x=-2, y=4-2+1=3$

$(-2,3)$

c. $y=7x^2+4x+1$
$y=7x^2-4x+1$

$7x^2+4x+1=7x^2-4x+1$

$8x=0$

$x=0, y=1$

$(0,1)$

8d. $6x^2+2x-9=x^2+7x+1$

$5x^2-5x-10=0$

$x^2-x-2=0$

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

$x=2$, $x=-1$

$y=19$ $y=-5$

$(2,19)$ $(-1,-5)$

e. $(x-2)(6x+5)=(x-5)^2+1$

$6x^2-7x-10=x^2-10x+25+1$

$5x^2+3x-36=0$

$(5x-12)(x+3)=0$

$x=\frac{12}{5}$ $x=-3$

$y=\frac{169}{25}+1$ $y=65$

$=\frac{194}{25}$

$(\frac{12}{5},\frac{194}{25})$ $(-3,65)$

f. $2x^2-6x=x^2+2x$

$x^2-8x=0$

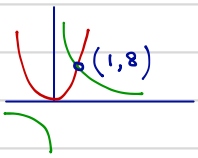
$x(x-8)=0$

$x=0$, $x=8$

$y=0$ $y=0$

$(0,0)$ $(8,0)$

9a $y = 8x^2$, $y = 8x^{-1}$

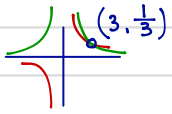


$x^2 = \frac{1}{x}$

$x^3 = 1$

$x = 1, y = 8 \quad (1,8)$

b $y = x^{-1}$, $y = 3x^{-2}$



$\frac{1}{x} = \frac{3}{x^2} \qquad x \neq 0$

$x^2 = 3x$

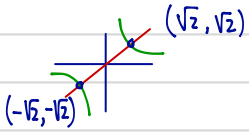
$x^2 - 3x = 0$

$x(x-3) = 0$

$x = 0$

$x = 3, y = \frac{1}{3}$

c $y = x$, $y = 4x^{-3}$



$x = \frac{4}{x^3}$

$4 = x^4$

$x^4 - 4 = 0$

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

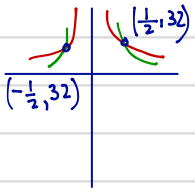
$x = \pm\sqrt{2}$

$y = \pm\sqrt{2}$

d $y = 8x^{-2}$, $y = 2x^{-4}$

$8x^{-2} = 2x^{-4}$

$\frac{8}{x^2} = \frac{2}{x^4}$



$4x^4 = x^2$

$4x^4 - x^2 = 0$

$x^2(4x^2 - 1) = 0$

$x \neq 0, x = \pm\frac{1}{2}$

$y = 32$

e $y = gx^{-3}$, $y = x^{-5}$

$\frac{g}{x^3} = \frac{1}{x^5}$

$gx^5 = x^3$

$gx^5 - x^3 = 0$

$x^3(gx^2 - 1) = 0$

$x \neq 0, x = \pm\frac{1}{3}$

$y = 3^5$

f $y = \frac{1}{4}x^4$, $y = 16x^{-2}$

$\frac{1}{4}x^4 = \frac{16}{x^2}$

$16 = \frac{1}{4}x^6$

$64 = x^6$

$x^6 - 64 = 0$

$(x^3+8)(x^3-8) = 0$

$x = \pm 2$

$y = 4 \quad (2,4) \times (-2,4)$