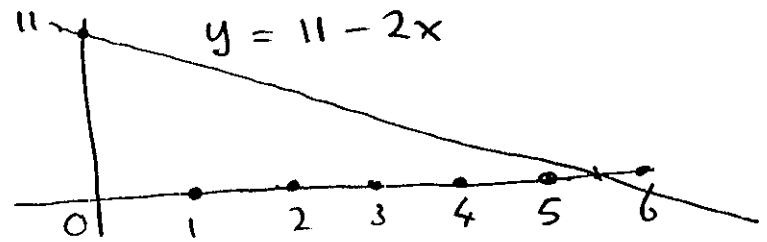
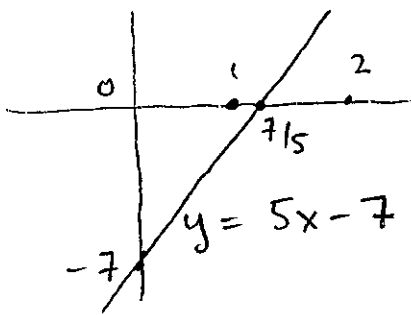
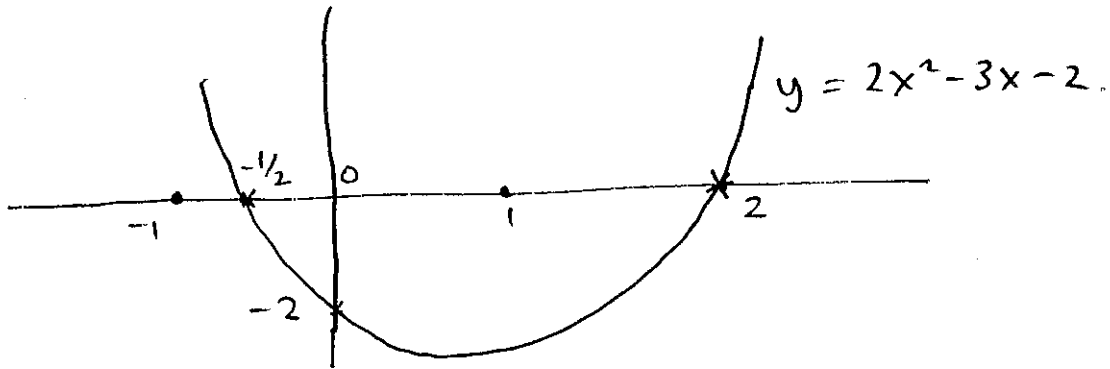


Homework 3 (Calculus)Solutions

1.



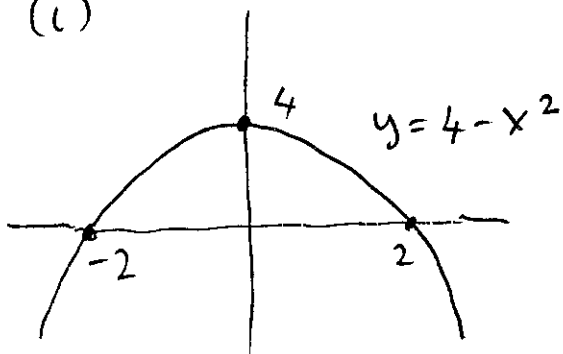
2.  $2x^2 - 3x - 2 = (2x + 1)(x - 2)$     Roots:  $x = -\frac{1}{2}$ ,  $x = 2$



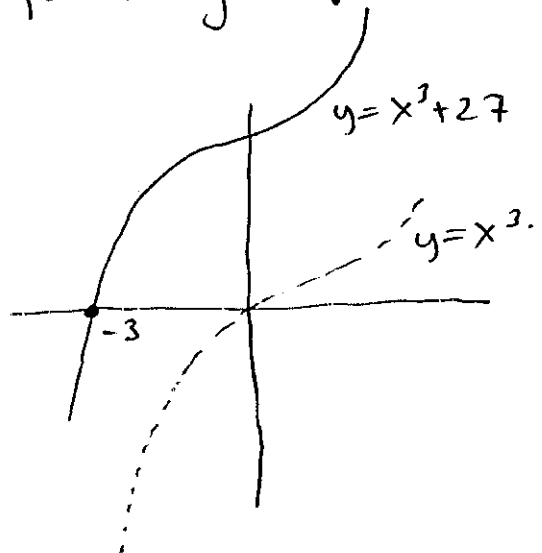
Thus  $y = 2x^2 - 3x - 2 \geq 0$  when  $x \leq -\frac{1}{2}$  and when  $x \geq 2$ .

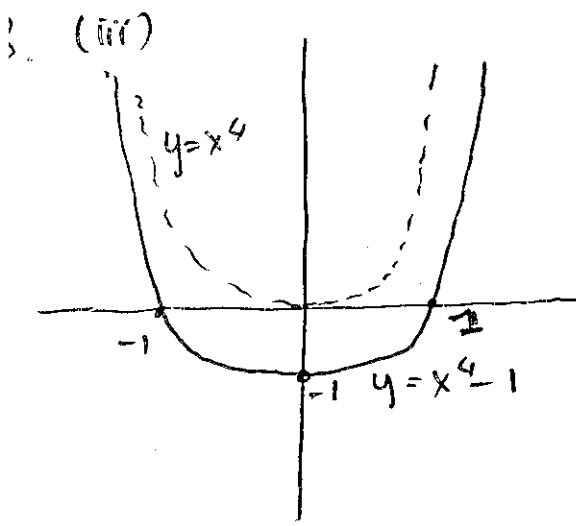
This is also the domain of the function  $g(x) = \sqrt{2x^2 - 3x - 2}$

3. (i)

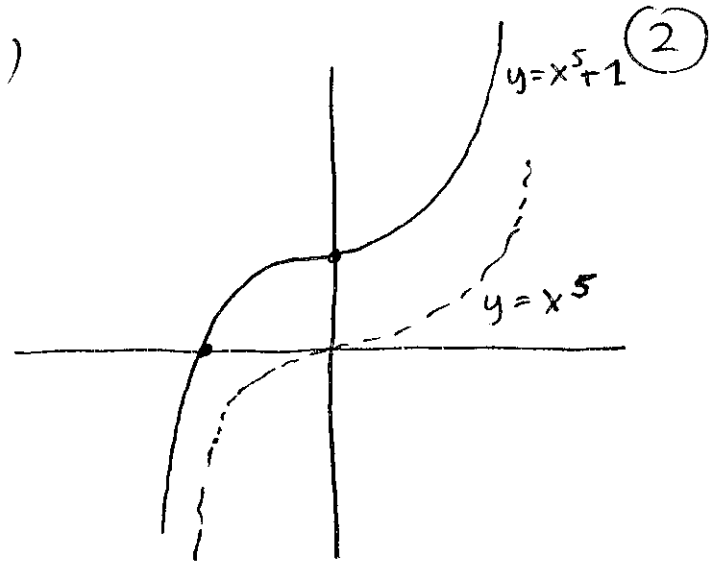


(ii)





(iv)



$$8^{2/3} = (\sqrt[3]{8})^2 = 2^2 = \boxed{4}$$

$$81^{-1/4} = \frac{1}{\sqrt[4]{81}} = \boxed{\frac{1}{3}}$$

$$128^{5/7} = (\sqrt[7]{128})^5 = 2^5 = \boxed{32}$$

$$125^{-4/3} = \frac{1}{(\sqrt[3]{125})^4} = \frac{1}{5^4} = \boxed{\frac{1}{625}}$$

$$\sqrt[5]{A^{10}B^{15}} = (A^{10}B^{15})^{1/5} = A^{10/5}B^{15/5} = \boxed{A^2B^3}$$

$$\begin{aligned} \sqrt[3]{x^2y} \cdot (xy^{-1})^{4/3} &= (x^2y)^{1/3} \cdot (xy^{-1})^{4/3} = x^{2/3} \cdot y^{1/3} \cdot x^{4/3} \cdot y^{-4/3} \\ &= x^{2/3+4/3} \cdot y^{1/3-4/3} \\ &= \boxed{x^2 \cdot y^{-1}} \end{aligned}$$

