

SOLUTIONS (Assignment 8)

Exercise sheet 1

- 1
- | | | | |
|---|----------------|---|--------------------|
| a | $10xy^2(5x-1)$ | f | $(2x+3)(x-2)$ |
| b | $(x+11)(x-1)$ | g | $(x-2)(2x+9)$ |
| c | $(x-9)(x+7)$ | h | $(6x-5)^2$ |
| d | $(2x-1)(2x-5)$ | i | $(x-7)(x+7)$ |
| e | $(7x+1)(x-4)$ | j | $(4x-11y)(4x+11y)$ |

- 2
- a $(4x+3)(16x^2-12x+9)$
 - b $(2x-9y)(4x^2+18xy+81y^2)$
 - c $5x^2(x-1)(3x-2)$
 - d $10(x-3)(x^2+3x+9)$
 - e $4x^2(3x-4)(x^2+1)$

- 3
- | | | | |
|---|-------------------|---|---------------|
| a | $x=1, x=2/3$ | f | $x=5, x=-5$ |
| b | $x=0, x=-4$ | g | $x=0, x=1/5$ |
| c | $x=9$ | h | $x=-8, x=2/3$ |
| d | $x=0, x=13, x=-3$ | | |
| e | $x=3/2, x=-3/2$ | | |

- 4
- | | | | | | |
|---|-------------------|---|----------------------------------|---|-----------------------|
| a | $\frac{2y^3}{3x}$ | c | $\frac{9(x+2)(4x-1)}{x^2(6x+7)}$ | e | $\frac{x(2-x)}{2x-1}$ |
| b | $\frac{10}{9}$ | d | $\frac{x+4}{x+2}$ | f | 5 |

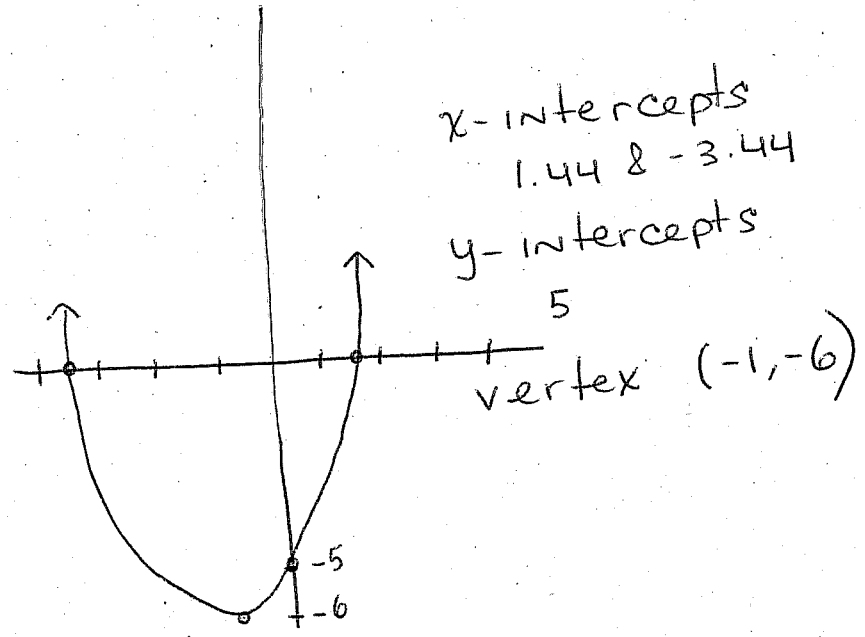
g $\frac{x+2}{x-2}$

h $\frac{14}{(x-5)^2}$

5 a $1 \pm \sqrt{2}$ b $x=14, x=-10$

c $x=7, x=2$ d $x=-4, x=3$

6 a

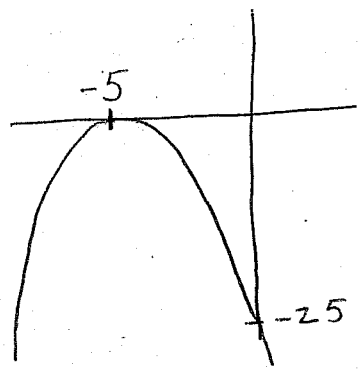


x-intercepts
1.44 & -3.44

y-intercept
5

vertex (-1, -6)

b

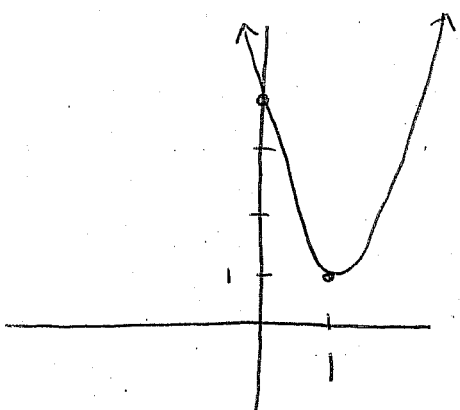


x-intercept
 $x=-5$

y-intercept
 $y=-25$

vertex (-5, 0)

c



x-intercepts
NONE

y-intercept
 $y=4$

vertex
(1, 1)

EXERCISE SHEET 2

3

① a $\log_a \left(\frac{M^5}{N^7} \right)$

b $\log \left(\frac{2^{1/2} 3^{1/2}}{5^2} \right)$

c $\ln(14)$

d $\log \left(\frac{1}{20^3} \right)$

② a 2.398 b 1.065 c 1.73 d 14.49
e 0.1235

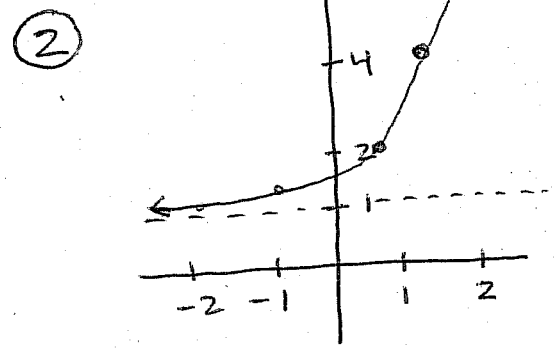
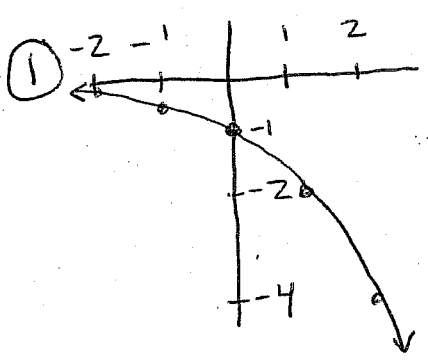
③ a $x=3$
b $x=0, x=-5$ but -5 impossible (gives negative log)
c $x=5, x=2$ but 2 impossible
d $x=3, x=-2$ but -2 impossible
e $x=1/4$
f $x = \frac{\ln 20}{\ln 3} = 2.73$
g $x = \frac{\ln 101}{\ln 7} = 2.37$
h $x = \frac{1}{\ln 10} = 0.43$
i $x = 24.78$
j $x = 3.15$
k $x = -0.214$
l $x = 26.175$

- ④ a) 2.68×10^{140}
- b) 5.52×10^{216}

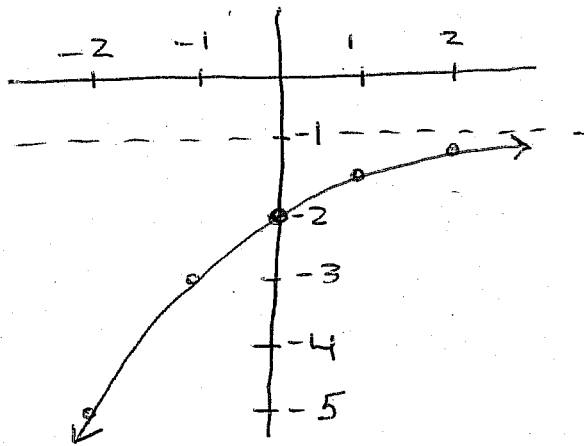
Exercise sheet 3

- ① 7:30 AM.
- ② 3 hrs 15 minutes
- ③ 2001 5.5 billion
2025 7.37 billion
- ④ 1870 6.07×10^8
1900 6.519×10^{31}
Doubling time 137 days
started in 1859
- ⑤ a) No your highest concentration was 13.99 mg/cc
- b) 75 hrs
- c) 10.5 hrs

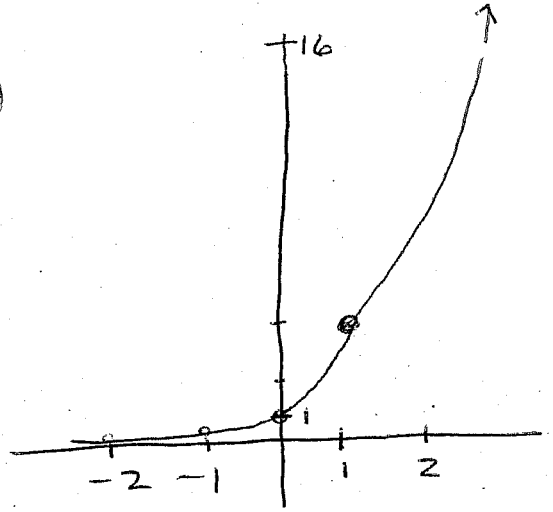
GRAPHS



③



④



⑤

Solve for y

① $y = 16x$

② $y = \sqrt{\frac{16}{x^{1/3}}}$

③ $y = \frac{x^{\log_3(\frac{1}{3})}}{3} = \frac{1}{3x}$

④ $y = x^{1/2}$

