

ERASMUS UNIVERSITY ROTTERDAM

Entrance examination Mathematics
for Business Administration

PRACTICE EXAM ANSWERS

Below, only the final answers are given.

Note, that on your examination paper all necessary steps, formulas, substitutions, diagrams or graphs leading to your final answer must also be written down.

Furthermore, questions containing the words “solve”, “compute” or “calculate” require an exact answer; a decimal approximation is not allowed.

1.	a) $x = 3$ or $x = \frac{1}{3}$ b) $p = 5$ or $p = -5$
2.	a) b) $(4, 2)$ c) $0 < x \leq 4$
3.	a) $\frac{(1+e^x)e^x - e^x \cdot e^x}{(1+e^x)^2} = \frac{e^x}{(1+e^x)^2}$ b) $\frac{2x}{1+x^2}$
4.	a) $x = -2$ and $y = -5$ b) $x = -\frac{1}{2}$ and $y = -2$
5.	a) b) -1
6.	a) b) $(1, 0)$ $(e, 1)$ $(e, -1)$
7.	a) $x = 125$ b) $x = -3$ b) $x = \frac{1}{4^5} = \frac{1}{1024}$

8.	a) $t = 3 + 2k$ where $k = \dots, -2, -1, 0, 1, 2, \dots$ b)
9.	a) $p = 6$ and $q = 5$ b) -1
10.	
11.	$K = 60000$
12.	a) 150 b) 450
13.	a) $N_0 = 500$ b) $t = \frac{\ln 2}{0,069}$
14.	a) $\left(\frac{1}{6}\right)^6$ b) $6 \cdot \frac{1}{6} \cdot \left(\frac{5}{6}\right)^5 = \left(\frac{5}{6}\right)^5$
15.	a) $\ln 2$ b) $\int \left(1 - \frac{2x}{1+x^2}\right) dx = x - \ln(1+x^2) + C$

<p>A.</p>	<p>a) $x = 0$</p> <p>b) $x < 0$</p> <p>c) $f(-x) = \frac{1-e^{-x}}{1+e^{-x}} = \frac{e^x(1-e^{-x})}{e^x(1+e^{-x})} = \frac{e^x-1}{e^x+1} = -\frac{1-e^x}{1+e^x} = -f(x)$</p> <p>d) -1</p> <p>e) 1</p> <p>f) $\frac{-2e^x}{(1+e^x)^2}$</p> <p>g) for every x</p> <p>h)</p> <p>i) $x = 0$ and $y = 0$</p>
<p>B.</p>	<p>a) 60200</p> <p>b) 3.25</p> <p>c) 3.18%</p> <p>d) 3,35%</p>