



Exercise 1: (1 point) Rationalize:

a) $\frac{6}{\sqrt{3}} = 2\sqrt{3}$

b) $\frac{14}{\sqrt[7]{2^3}} = 7^2\sqrt[7]{2^4}$

c) $\frac{\sqrt{5} + \sqrt{3}}{\sqrt{5} - \sqrt{3}} = 4 + \sqrt{15}$

Exercise 2: (2.5 points) Work out, express as a single radical and simplify if possible:

a) $2\sqrt{243} - 3\sqrt{1875} + \sqrt{192} = -49\sqrt{3}$ (0.65)

b) $\frac{\sqrt[3]{2^{-7} \cdot 3^5}}{\sqrt[5]{2^3 \cdot 3^{-7}}} = \frac{3^3}{2^2} \sqrt[15]{3}$ (0.75)

c) $\sqrt[5]{x^{-4}} \cdot \sqrt{x^7} : \sqrt[3]{x^2} = x^2 \cdot \sqrt[30]{x}$ (0.7)

d) $a^{-5/2} \cdot a^{3/4} : a^{-1/5} = \frac{1}{a} \cdot \sqrt[20]{\frac{1}{a^{11}}}$ (0.4)

Exercise 3: (0.75 points) The flying time from Malaga to Bath is of two hours and forty minutes. Find the percentage error if we round it to two and three quarters hours $E_p = 3.13\%$

Exercise 4: (1 point) Solve and factorize the equation $x^6 + 12x^5 + 53x^4 + 102x^3 + 72x^2 = 0$

Roots: $x = 0$ double, $x = -2$, $x = -3$ double, $x = -4$

Factorization: $x^2(x+2)(x+3)^2(x+4)$

Exercise 5: (0.75 points) Study the following unions and intersections of intervals:

a) $[-2, 1) \cup [-1, +\infty) = [-2, +\infty)$

b) $(-7, -1] \cap (-3, -2] = (-3, -2]$

Exercise 6: (1 point) Work out:

a) $3.68 \cdot 10^{-5} - 4.5 \cdot 10^{-4} + 1.39 \cdot 10^{-3} = 9.77 \cdot 10^{-4}$

b) $(8.37 \cdot 10^{-3}) \cdot (5.79 \cdot 10^{-7}) = 4.85 \cdot 10^{-9}$

c) $(3.82 \cdot 10^{-2}) : (8.91 \cdot 10^{-5}) = 4.29 \cdot 10^2$



Exercise 7: (3 points) Work out the value of the following expressions and simplify if possible:

a) $\frac{x}{x^2 - 4x + 4} - \frac{x-1}{x^2 - 4} + \frac{5}{2-x} = \frac{-5x^2 + 5x + 18}{(x-2)^2(x+2)}$ (1.25)

b) $\frac{10x^2 + 50x}{x^2 + 7x + 10} \cdot \frac{x^2 - 4}{5x^3 - 10x^2} = \frac{2}{x}$ (1)

c) $\frac{x^2 + 10x + 25}{x^2 + 8x + 15} \div \frac{x^2 - 25}{x^2 - 9} = \frac{x-3}{x-5}$ (0.75)

