

Mathematics (National 5) USAP 4(a) Homework – Ink Exercise

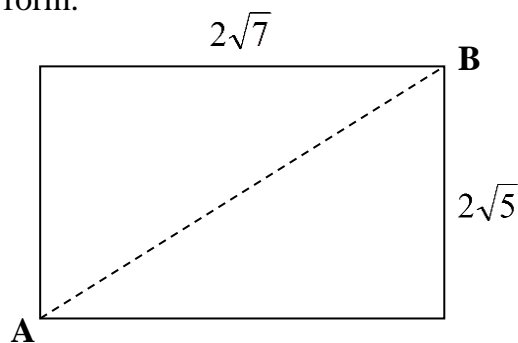
1. Simplify (a) $\sqrt{147} - 5\sqrt{3}$ (b) $\sqrt{2}(\sqrt{3} + \sqrt{2}) - \sqrt{6}$ (2,2)

2. Express $2\sqrt{5} + \sqrt{20} - \sqrt{45}$ as a surd in its simplest form. (2)

3. Express with a rational denominator $\frac{5}{2\sqrt{3}}$ (2)

4. Express as a fraction with a rational denominator $\frac{5}{4 - \sqrt{3}}$ (3)

5. Find the length of the diagonal, AB, of this rectangle leaving your answer as a surd in its simplest form.



(4)

6. Simplify $\frac{m^5}{m^3}$ (1)

7. Simplify the expression below, giving your answer with a positive power.

$m^5 \times m^{-8}$ (2)

8. Express

$p^3(p^2 - p^{-3})$ in its simplest form. (2)

Mathematics (National 5) USAP 4(a) Homework – Ink Exercise

9. Simplify $\frac{3a^2 \times 2a}{a^2}$ (3)

10. Express in its simplest form $\frac{y^4 \times y}{y^{-2}}$ (2)

11. Evaluate $16^{\frac{3}{4}}$ (2)

12. Simplify, expressing your answer with positive indices.

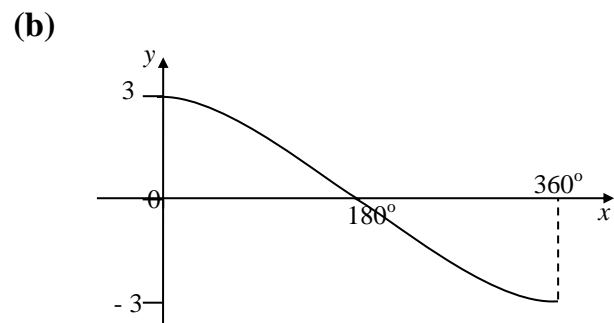
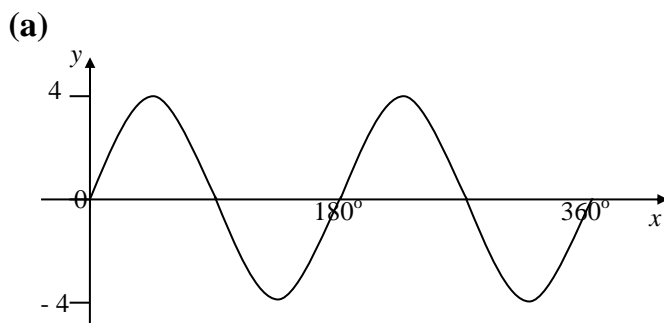
$(x^2 y^4) \div (x^{-3} y^6)$ (2)

13. Simplify $k^8 \times (k^2)^{-3}$ (2)

14. Express $a^{\frac{2}{3}}(a^{\frac{2}{3}} - a^{-\frac{2}{3}})$ in its simplest form. (2)

15. Express $a^{\frac{1}{2}}(a + \frac{1}{a})$ in its simplest form. (2)

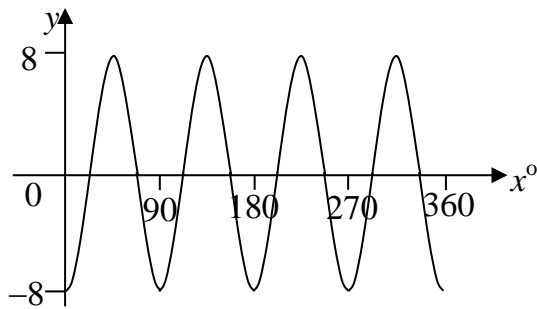
16. Write down the equations of the following graphs. (6)



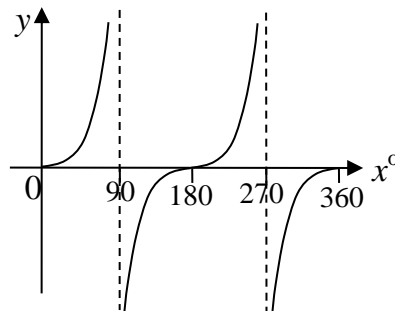
Mathematics (National 5) USAP 4(a) Homework – Ink Exercise

2. Write down the equation of each graph shown below: (5)

(a)



(b)



3. Make a neat sketch of the function $y = -3 \sin 2x^\circ$, $0 \leq x \leq 360$, showing the important values. (3)

4. Make a neat sketch of each of the following for $0 \leq x \leq 360$, showing all important points.

(a) $y = 4\sin(x - 45)^\circ$

(b) $y = 2\cos x^\circ + 1$

(6)

Total – 55 marks