

GRAPHS – WORKSHEET #3**COURSE/LEVEL**

NSW Secondary High School Year 12 HSC Mathematics Extension 2.

TOPICGraphs: Drawing graphs of the form $y = [f(x)]^n$. (Syllabus Ref: 1.6)Drawing graphs of the form $y = \sqrt[n]{f(x)}$. (Syllabus Ref: 1.7)

- graph a function $y = [f(x)]^n$ by initially graphing $y = f(x)$,
- graph a function $y = \sqrt[n]{f(x)}$ by initially graphing $y = f(x)$.

1. $y = x$, $y = x^2$, $y = x^3$, $y = x^4$ ($0 \leq x \leq 1$)
2. $y = -x$, $y = x^2$, $y = -x^3$, $y = x^4$ ($0 \leq x \leq 1$)
3. $y = x^2 - 1$, $y = (x^2 - 1)^2$
4. $y = x^2 - 1$, $y = (x^2 - 1)^3$
5. $y = x(x^2 - 4)$, $y = x^2(x^2 - 4)^2$
6. $y = x(x^2 - 4)$, $y = x^3(x^2 - 4)^3$
7. $y = -2 \sin x$, $y = 4 \sin^2 x$
8. $y = -\sin x$, $y = -\sin^3 x$
9. $y = \ln x$, $y = (\ln x)^2$
10. $y = \ln x$, $y = (\ln x)^3$
11. $y = |x - 2| + 1$, $y = (x - 2)^2 + 2|x - 2| + 1$
12. $y = |x - 1| + |x + 1|$, $y = (|x - 1| + |x + 1|)^2$
13. $y = 1 - x^2$, $y = \sqrt{1 - x^2}$
14. $y = x^2 - 1$, $y = \sqrt{x^2 - 1}$
15. $y = x(x^2 - 1)$, $y = \sqrt{x(x^2 - 1)}$
16. $y = x^2(x^2 - 1)$, $y = \sqrt{x^2(x^2 - 1)}$
17. $y = (x - 2)(x + 1)^2$, $y^2 = (x - 2)(x + 1)^2$
18. $y = (x - 2)(x + 1)^3$, $y^2 = (x - 2)(x + 1)^3$
19. $y = \sin x$, $y^2 = \sin x$
20. $y = 4 \cos x$, $y^2 = 4 \cos x$
21. $y = \frac{x}{(x-1)(x+2)}$, $y = \sqrt{\frac{x}{(x-1)(x+2)}}$
22. $y = \frac{x(x-1)}{x+2}$, $y = \sqrt{\frac{x(x-1)}{x+2}}$