BECA / Huson / 11.1 IB Math SL Name:
13 November 2017

# Homework: Exponents and logarithms

*Answer on lined paper separately*

Evaluate these expressions without using a calculator.

1. $log_4 16$
2. $log_3 \frac{1}{3}$
3. $log 1000$
4. $log_5 5^9$
5. $log_2 4^3$
6. $log_7 1$

Write these equations in log form.

7. $27 = 3^x$
8. $x = 3^7$
9. $x = b^a$

Write these equations in log form.

10. $x = log_3 81$
11. $x = log_5 125$
12. $4 = log_2 x$

Express each item as fractions with rational denominators.

13. $\dfrac{1}{\sqrt{3}}$
14. $\dfrac{x^2 - 1}{\sqrt{x}}$
15. $\dfrac{1}{2 + \sqrt{7}}$
16. $\dfrac{x^2 - 1}{x - \sqrt{5}}$

State how each function has been transformed from its parent function.

17. $g(x) = f(x - 4)$
18. $g(x) = f(x + 2) + 3$
19. $g(x) = |x - 5| - 1$
20. $g(x) = \sqrt{x - 3} + 2$. (note: $\sqrt{x}$ is the parent function)

21. Let $f(x) = \frac{1}{2}x^2 + x - 4$ and $g(x) = -x - \frac{3}{2}$

(a) Rewrite $f$ in vertex form and state the vertex as an ordered pair.

(b) Factor the function $f$ and write down its roots.

(c) Graph the function $f$, labeling it. Mark the intercepts and graph the axis of symmetry as a dotted line, labeling it with its equation.

(d) Graph $g$ and label it with its name or equation.

(e) Mark the intersections of $f$ and $g$ as ordered pairs.

(f) Select one of the solutions and show that it satisfies the system by substituting it into both functions.