BECA / Huson / 11.1 IB Math SL Name:
30 October 2017

Homework: Exponents and radicals

Do these problems without a calculator. Answer the first page on loose leaf paper.

Simplify, leaving no negative or fractional exponents.

1. $4^{-1}x^{-2} \times \frac{8}{9}x^4y^{-3}$

2. $\frac{x\sqrt{25x^4}}{\sqrt[3]{7x^{-6}}}$

3. $x^3y^{-3} \div x^{-4}y^2$

4. $(-a^2)^2$

5. $\frac{6}{5}(x^{-2}y)^2 \times \frac{1}{3}(x^4y^{-1})$

6. $125^{\frac{4}{3}}$

7. $(1.21)^{\frac{1}{2}}$

8. $36^{\frac{1}{4}}$

9. $\sqrt[3]{\frac{x^6y^{-12}}{z^{-3}}}$

10. Let $f(x) = x^2 - 4$.
    (a) Rewrite this function in vertex form and state the vertex as an ordered pair.
    (b) $g(x) = f(x + 5) + 2$. Write $g(x)$ in vertex form.
    (c) State the geometric transformation that maps f into g.
    (d) Find $f^{-1}(x)$

11. Let $f(x) = (x - 2)^2 - 3x$ and $g(x) = 3x - 2$. Find $(f \circ g)(x)$

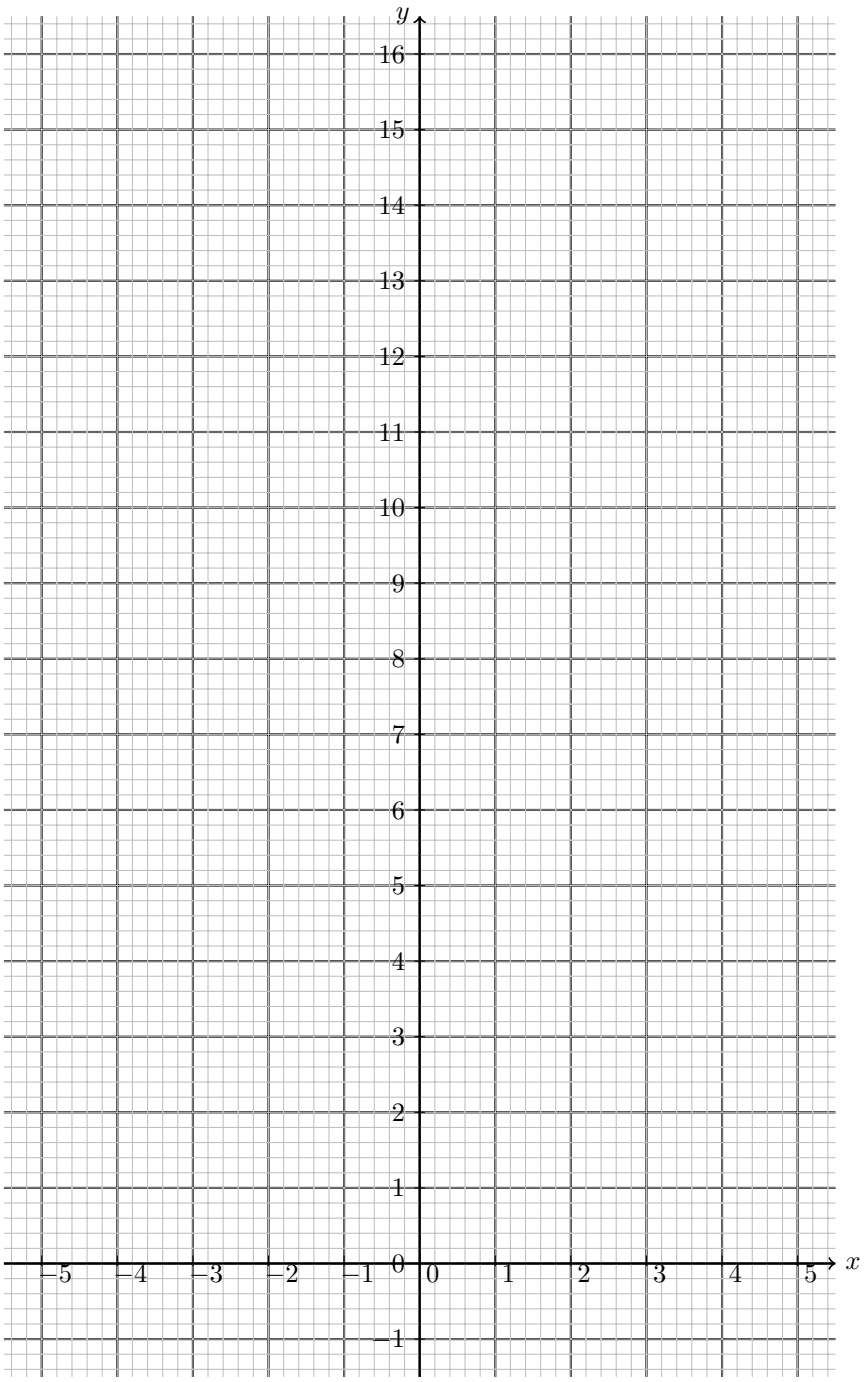
12. Let $f(x) = (\frac{1}{2})^x$, for $-4 \leq x \leq 4$.

(a) On the grid below, graph f.

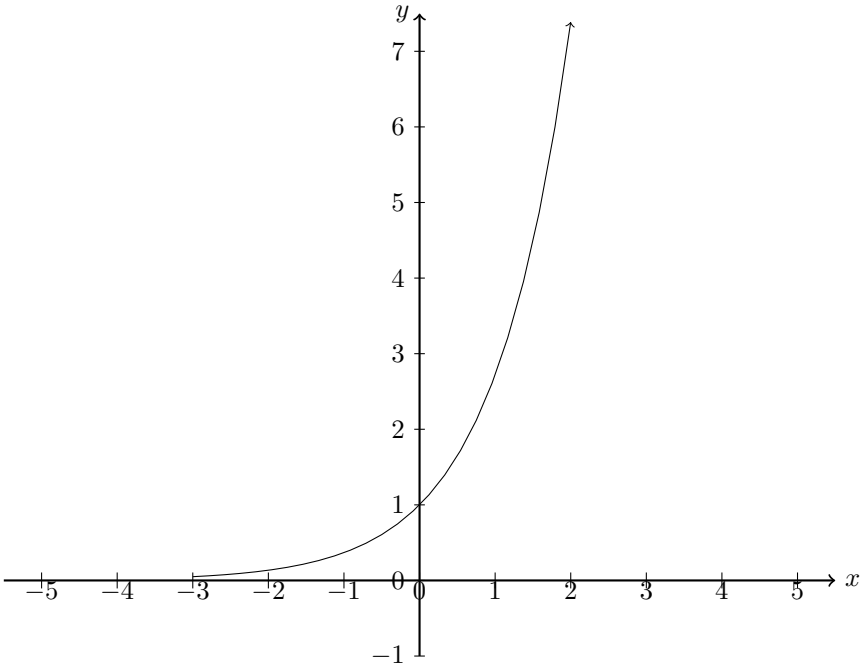
(b) Write down the value of $f(0)$.

(c) Using the graph, solve for $f(x) = \frac{1}{4}$.

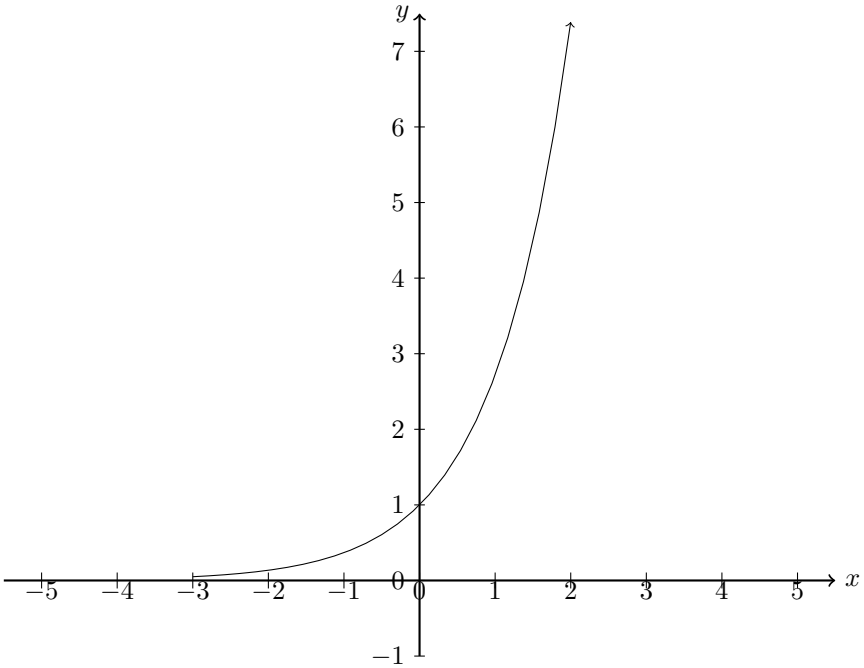
(d) What is the value of $f^{-1}(8)$?



13. The function $f(x) = e^x$ is shown on the graph. Sketch $g(x) = f(x-3)$.



14. The function $f(x) = e^x$ is shown on the graph. Sketch $g(x) = f(-x)+2$. Plot and label the asymptote.



15. Graph the function $f(x) = x^2 - 4$ over the domain $x \geq 0$ on the grid below.

(a) Label the y-intercept as an ordered pair.

(b) Label the point representing the solution to the equation $f(x) = 0$ as an ordered pair.

(c) Write down the value of $f^{-1}(-3)$ and label the point $(f^{-1}(-3), -3)$.

(d) Graph the inverse function, $f^{-1}(x)$.