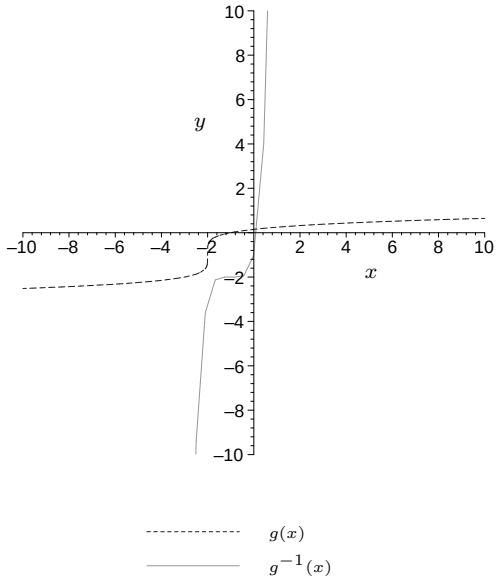
Problems

1. Let $g(x) = (x+2)^{1/5} - 1$. Graph $g(x)$, $g^{-1}(x)$, and find a formula for $g^{-1}(x)$.
2. The point $(2, 3)$ is on the graph of $f(x)$. Evaluate $\dfrac{2f^{-1}(3)}{4} - 1$.
3. Factor $4xu + 10xv - 2xw - 6yu - 15yv + 3yw$.
4. Factor $11y^4 + 62y^2 + 35$.
5. Factor $8x^3 - 20x^2 + 7x + 2$.
6. Factor $8w^9 - 64z^6$.
7. Rationalize the numerator: $\sqrt{3x+7} - \sqrt{3x}$.
8. Let $f(x) = 1/(x-3)$ and $g(x) = 2x^2 + 7$. Solve $(g \circ f)(x) = 8$ for x.
9. Let $h(x) = \sqrt{-\dfrac{\pi x - 1}{11}} + \sqrt{7}$ and $g(x) = \sqrt{x}$. If $h(x) = (g \circ f)(x) + g(7)$, what is $f(x)$?
10. A circle and a square have equal the perimeters. The area of the square is 20 m^2. What is the area of the circle?
11. The radius of a sphere is 10 cm and is decreasing at a constant rate of 1 cm per hour. How long will it take for the sphere to reduce to 1/3 of its original size? (round your answer to 1 decimal place).

Answers

1. $g^{-1}(x) = (x+1)^5 - 2$



2. 0
3. $(2x - 3y)(2u + 5v - w)$.
4. $(11y^2 + 7)(y^2 + 5)$.
5. $8(x-2)\left(x - \dfrac{1+\sqrt{3}}{4}\right)\left(x - \dfrac{1-\sqrt{3}}{4}\right)$
6. $8\ (w^3 - 2\,z^2)\,(w^6 + 2\,w^3 z^2 + 4\,z^4)$.
7. $\dfrac{7}{\sqrt{3x+7} + \sqrt{3x}}$.
8. $x = 3 \pm 1/\sqrt{2}$.
9. $f(x) = -\dfrac{\pi x - 1}{11}$.
10. $80/\pi$ m^2.
11. 3.1 hours.