

Factor.

1. $105n^3 + 175n^2 - 75n - 125$

2. $96n^3 - 84n^2 + 112n - 98$

3. $28v^3 + 16v^2 - 21v - 12$

4. $4v^3 - 12v^2 - 9v + 27$

5. $5a^2z - 4a^2c + 15xz - 12xc$

6. $2m^3 - m^2 + 4m - 2$

Solve.

7. $(2x-5)(x^2-x-12)=0$

8. $16x^3 + 32x^2 = x + 2$

9. $3n^3 - 7n^2 + 12n = 28$

For each equation, give the leading coefficient, degree, and a sketch of the end behavior.

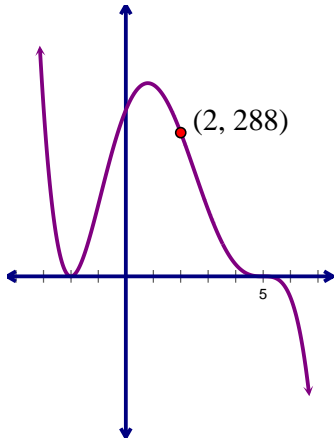
10. $f(x) = 4x^5 - 28x^8 + 5x^7 - 21$

11. $g(x) = -3(x-1)^2(2x+7)(x+5)^8$

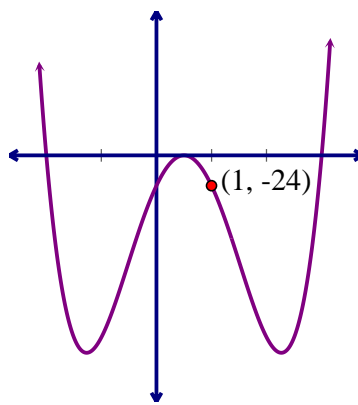
12. $h(x) = (x+1)^7(3x+2)^2(x-9)^5$

Given the graph, write the equation of the function in the desired form(s).

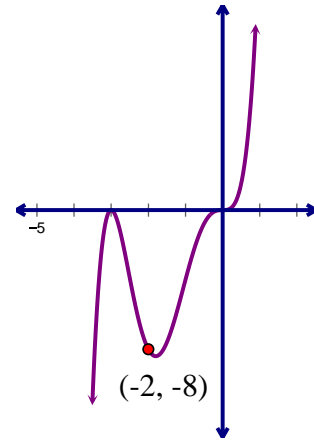
13. factored



14. factored, standard



15. factored, standard



Given the description, write the equation of the function in the desired form.

16. roots: $x = 2$ (mult. 5), $x = -8$, $x = 0$ (mult. 3); $f(1) = -45$; factored form

17. roots: $x = 3$, $x = \frac{3}{2}$, $x = -1$; $g(-2) = 210$; factored form and standard form

Given the equation, sketch a graph of the function.

18. $f(x) = -10(x+7)^4(x-2)(x+1)^3$

19. $g(x) = \frac{2}{5}x^2(2x-5)(x-4)^6(x+3)^2$