5.1 Quadratic Expressions
Homework Help

2. $9x^{\frac{2}{5}} - 12x^{\frac{1}{5}} + 4$

$u = x^{\frac{1}{5}}$

$9u^2 - 12u + 4$

$(3u-2)(3u-2)$

$= \boxed{(3x^{\frac{1}{5}} - 2)^2}$

6. $x^{10} + x^5 - 12$

$u = x^5$

$u^2 + u - 12$

$(u+4)(u-3)$

$= \boxed{(x^5+4)(x^5-3)}$

9. $3x^3 - 4x^2 + 4$

not quadratic in nature

11. $3(\sqrt[3]{x+3})^6 + (\sqrt[3]{x+3})^3 - 2$

$u = (\sqrt[3]{x+3})^3$

$3u^2 + u - 2$

$(3u-2)(u+1)$

$= \boxed{(3\sqrt[3]{x+3} - 2)(\sqrt[3]{x+3} + 1)}$

18. $3x^6 - 8x^3 + 4$

$u = x^3$

$3u^2 - 8u + 4$

$(3u-2)(u-2)$

$= \boxed{(3x^3 - 2)(x^3 - 2)}$

19. $2(2x)^2 - 4(2x) - 6$

$u = 2x$

$2u^2 - 4u - 6$

$(2u+2)(u-3)$

$= (2(2x)+2)((2x)-3)$

$= \boxed{(4x+2)(2x-3)}$

20. $x^8 - 4x^4 - 21$

$u = x^4$

$u^2 - 4u - 21$

21. $36(5x)^2 - 49$

⋮

$(6(5x)-7)(6(5x)+7)$

$= \boxed{(30x-7)(30x+7)}$

22. $\sqrt[3]{-192x^4y^2}$

$= \boxed{-4x\sqrt[3]{3xy^2}}$

23. $\sqrt[4]{486a^5b^3}$

$= \boxed{3|a|\sqrt[4]{6ab^3}}$

25. FOIL!

26-27. Remember: To add radicals, they need to have the same index and radicand.

28-30. Remember order of operations! (including "±")