Problems for Gateway #4: Derivatives of Power Functions and Polynomials

1.   Find the derivative of: $f(x) = 3 \cdot x^2 + 14 \cdot x + 10$.

2.   Find the derivative of: $g(x) = 12 \cdot x^4 + 3 \cdot x^3 + 1$.

3.   Find the derivative of: $k(x) = 8 \cdot x^{1/2} - 12$.

4.   Find the derivative of: $m(x) = 4 \cdot x^3 + 2 \cdot x + 17 \cdot x^{16}$.

5.   Find the derivative of: $p(x) = 7 \cdot x^{3/2} + 99 \cdot x^2 - x^{-7}$.

6.   Find the derivative of: $q(x) = 9 \cdot x + 19 \cdot x^6$.

7.   Find the derivative of: $u(z) = 14 \cdot z^{12} + 3 \cdot z^7 - z^{1/2}$.

8.   Find the derivative of: $v(t) = 19 \cdot t^2 + 38 \cdot t^4 + 22$.

9.   Find the derivative of: $t(y) = 9 \cdot y^8 + 8 \cdot y^9 - y^{-1}$.

10.   Find the derivative of: $n(t) = 11 \cdot t^4 + 9 \cdot t^3 + t^2$.

ANSWERS:

1. $f'(x) = 6x + 14..$

2. $g'(x) = 48x^3 + 9x^2$.

3. $k'(x) = 4x^{-1/2}$.

4. $m'(x) = 12x^2 + 2 + 272x^{15}$.

5. $p'(x) = 10.5x^{1/2} + 198x + 7x^{-8}$.

6. $q'(x) = 9 + 114x^5$.

7. $u'(z) = 168z^{11} + 21z^6 - 0.5z^{-1/2}$.

8. $v'(t) = 38t + 152t^3$.

9. $t'(y) = 72y^7 + 72y^8 + y^{-2}$.

10. $n'(t) = 44t^3 + 27t^2 + 2t$.