

Unit Test I

- 1) $(2^0)(2^{-3})(2^3) =$
 $2^{0+(-3)+3} = 2^0 = 1$
- 2) $X^9 + X^3 = X^{9-3} = X^6$
- 3) $(4Q^3)^2 = 4^2 Q^{3 \cdot 2} = 16Q^6$
- 4) $\frac{X^3 Y^{-2}}{Y^2 X^4} = X^{3-4} Y^{-2-2} =$
 $X^{-1} Y^{-4}$ or $\frac{1}{XY^4}$
- 5) $\frac{3}{4A} - \frac{8}{4B} = \frac{3B}{4AB} - \frac{8A}{4AB} = \frac{3B-8A}{4AB}$
- 6) $\frac{R}{R} + R^0 = 1 + 1 = 2$
- 7) $\frac{2Y}{X+Y} + \frac{Y}{X-Y} = \frac{2Y(X-Y)}{X+Y(X-Y)} + \frac{Y(X+Y)}{X-Y(X+Y)} =$
 $\frac{2XY - 2Y^2 + XY + Y^2}{X^2 - Y^2} = \frac{-Y^2 + 3XY}{X^2 - Y^2}$
- 8) $4R^6 TR^{-2} + 5R^4 T - 2T =$
 $4R^4 T + 5R^4 T - 2T =$
 $9R^4 T - 2T$
- 9) $(5.6 \times 10^{-3})(3.4 \times 10^{-2}) =$
 $(5.6 \times 3.4)(10^{-5}) =$
 $19.04 \times 10^{-5} = 1.904 \times 10^{-4}$
- 10) $(4.55 \times 10^4)(2.1 \times 10^7) = 4.5 \times 2.1 \times 10^4 \times 10^7$
 $= 9.555 \times 10^{11}$
- 11) $(3.2 \times 10^4) + (1.6 \times 10^{-4}) = 2 \times 10^8$
- 12) $(2.3 \times 10^{-4})(1.6 \times 10^2) + (2.0 \times 10^{-3}) =$
 1.84×10^1
- 13) $(4\sqrt{5})(5\sqrt{3}) = 20\sqrt{15}$
- 14) $5\sqrt{6} + 2\sqrt{6} = 7\sqrt{6}$
- 15) $\frac{6}{\sqrt{2}} + \frac{1}{\sqrt{3}} = \frac{6\sqrt{2}}{2} + \frac{\sqrt{3}}{3} =$
 $\frac{3(6\sqrt{2}) + 2\sqrt{3}}{6} = \frac{18\sqrt{2} + 2\sqrt{3}}{6} =$
 $\frac{9\sqrt{2} + \sqrt{3}}{3}$
- 16) $\sqrt{36X^4} = 6X^2$
- 17) $\sqrt{\frac{16}{25}} = \frac{4}{5}$
- 18) $\sqrt{\sqrt{16}} = \sqrt{4} = 2$

- 19) $(X+5)(3X+2)$
- 20) $3(X^2 - 3X + 2) = 3(X-1)(X-2)$
- 21) $(X^4 - 1) = (X^2 + 1)(X^2 - 1) =$
 $(X^2 + 1)(X+1)(X-1)$
- 22) $2X^2 + 3X - 2 = (2X-1)(X+2)$
- 23) $X^2 - 10X = -18 - X$
 $X^2 - 9X + 18 = 0$
 $(X-3)(X-6) = 0$
 $X = 3; X = 6$
- 24) $2X^2 + 2X + 14 = 32 + 2X$
 $2X^2 - 18 = 0$
 $X^2 - 9 = 0$
 $(X+3)(X-3) = 0$
 $X = \pm 3$
- 25) $2X + 15 = X^2$
 $0 = X^2 - 2X - 15$
 $(X+3)(X-5) = 0$
 $X = -3; X = 5$
- 26) $X^3 = 16X$
 $X^3 - 16X = 0$
 $X(X^2 - 16) = 0$
 $(X)(X+4)(X-4) = 0$
 $X = 0, 4, -4$
- 27) $\sqrt{-144} = \sqrt{-1}\sqrt{144} = 12i$
- 28) $\sqrt{-8} + \sqrt{-4} = \sqrt{-2}\sqrt{4} + \sqrt{-1}\sqrt{4} =$
 $2i\sqrt{2} + 2i$
- 29) $(4\sqrt{-5})(2\sqrt{-6}) =$
 $4i\sqrt{5} \cdot 2i\sqrt{6} = -8\sqrt{30}$
- 30) $(i^3)^2 = i^6 = i \cdot i \cdot i \cdot i \cdot i \cdot i = -1 \cdot -1 \cdot -1 = -1$
- 31) $\frac{X}{8+2i} \cdot \frac{8-2i}{8-2i} = \frac{X(8-2i)}{64-(-4)} =$
 $\frac{8X-2Xi}{68} = \frac{4X-Xi}{34}$
- 32) $\frac{2}{1+\sqrt{2}} = \frac{1-\sqrt{2}}{1-\sqrt{2}} = \frac{2-2\sqrt{2}}{1-2} =$
 $\frac{2-2\sqrt{2}}{-1} = -2+2\sqrt{2}$
- 33) $10X^3Y^2$
- 34) $4A^3B$
- 35) $-5/2 D^3$