

11) $\frac{(5+2i)}{(3i)}$

RECALL $i^2 = -1$

$$\frac{5+2i}{3i} \cdot \frac{i}{i} = \frac{i(5) + i(2i)}{3i^2} = \frac{5i + 2i^2}{3i^2}$$

$$\frac{5i + 2(-1)}{3(-1)} = \frac{5i - 2}{-3} = \frac{-2}{-3} + \frac{5}{-3}i = \frac{2}{3} - \frac{5}{3}i$$

12) $\frac{2}{-3+4i} \cdot \frac{-3-4i}{-3-4i}$

$$\frac{2(-3-4i)}{-3(-3)+4i(-4i)} = \frac{-6-8i}{9-16i^2} = \frac{-6-8i}{9-16(-1)} = \frac{-6-8i}{9+16} = \frac{-6-8i}{25} = \frac{-6}{25} - \frac{8}{25}i$$

13) $\frac{2-3i}{1+5i} \cdot \frac{1-5i}{1-5i}$

$$\frac{(2-3i)(1-5i)}{1(1)+5i(-5i)} = \frac{2-10i-3i+15i^2}{1-25i^2} = \frac{2-13i-15}{1+25}$$

$$\frac{2-13i+15(-1)}{1-25(-1)} = \frac{2-13i-15}{1+25} = \frac{-13-13i}{26} = \frac{-13}{26} - \frac{13}{26}i = -\frac{1}{2} - \frac{1}{2}i$$

POWERS OF "i"

$i^1 = i$	$i^5 = i$	$i^9 = i$...
$i^2 = -1$	$i^6 = -1$	$i^{10} = -1$...
$i^3 = -i$	$i^7 = -i$	$i^{11} = -i$...
$i^4 = 1$	$i^8 = 1$	$i^{12} = 1$...

14) i^{36}

REMEMBER $i^0 = 1$

$$4 \overline{) 36} \begin{array}{r} 9 \text{ r } 0 \\ 36 \\ \hline 0 \end{array}$$

$i^{36} = i^0 = 1$

15) $i^{80} = i^2 = -1$

$$4 \overline{) 80} \begin{array}{r} 20 \text{ r } 0 \\ 80 \\ \hline 0 \end{array}$$

16) i^{-14}

$$4 \overline{) 14} \begin{array}{r} 3 \text{ r } 2 \\ 12 \\ \hline 2 \end{array}$$

$i^{-14} = \frac{1}{i^{14}} = \frac{1}{i^2} = -1$

$-1 + 1.8E-12i$
 $-1 + 1.8 \times 10^{-12}i$
 $-1 + .0000000000018i$

$\rightarrow -1 + 0i = -1$