

April 10, 2015
 Exam #3 - April 22 (Wed)
 Final - April 27 (Monday)

Apr 10-10:53 AM

10.7
 #8) $\sqrt{-10} \cdot \sqrt{-15}$
 $i\sqrt{10} \cdot i\sqrt{15}$
 $i^2 \cdot \sqrt{150}$
 $(-1) \cdot \sqrt{25 \cdot 6}$
 $-5\sqrt{6}$

Apr 10-10:57 AM

$$\frac{\sqrt{-400}}{\sqrt{-20}} = \frac{20i}{2i\sqrt{5}} \cdot \frac{\sqrt{5}}{\sqrt{5}}$$

$$= \frac{20i\sqrt{5}}{10i}$$

$$= 2\sqrt{5}$$

$$\frac{\sqrt{-400}}{\sqrt{-20}} = \sqrt{\frac{-400}{-20}}$$

$$= \sqrt{20} = 2\sqrt{5}$$

Apr 10-10:59 AM

$$-\frac{7}{i} \cdot \frac{-i}{-i} = \frac{7i}{-i^2}$$

$$= \frac{7i}{1} = 7i$$

$$0 + 7i$$

Apr 10-11:15 AM

$$\sqrt{-1} = i$$

$$i^2 = -1$$

$$i^3 = i^2 \cdot i^1 = (-1) \cdot i = -i$$

$$i^4 = i^2 \cdot i^2 = 1 \cdot 1 = 1$$

$$i^5 = i^4 \cdot i^1 = 1 \cdot i = i$$

$$i'' = (i^4)^2 \cdot i^3 = 1^2 \cdot (-i) = 1 \cdot (-i) = -i$$

$$\frac{11}{4} = 2 \text{ r } 3$$

$$i^{93} = (i^4)^{23} \cdot i^1 = (1)^{23} \cdot i = i$$

$$\frac{93}{4} = 23 \text{ r } 1 = 1 \cdot i = i$$

Apr 10-11:17 AM

$$i^4 = 1 \quad \frac{4}{4} = 1 \text{ r } 0 \quad 1$$

$$i^5 = i^4 \cdot i \quad \frac{5}{4} = 1 \text{ r } 1 \quad i$$

$$i^6 = i^4 \cdot i^2 \quad \frac{6}{4} = 1 \text{ r } 2 \quad -1$$

$$i^7 = i^4 \cdot i^3 \quad \frac{7}{4} = 1 \text{ r } 3 \quad -i$$

$$\frac{8}{4} = 2 \text{ r } 0 \quad 1$$

$$\frac{9}{4} = 2 \text{ r } 1 \quad i$$

$$\frac{10}{4} = 2 \text{ r } 2 \quad -1$$

$$\frac{11}{4} = 2 \text{ r } 3 \quad -i$$

$$\frac{12}{4} = 3 \text{ r } 0 \quad 1$$

Apr 10-11:33 AM

$$i^{513} = (i^4)^{128} \cdot i = 1 \cdot i = i$$

$$\frac{513}{4} = 128 \text{ r } 1$$

Apr 10-11:36 AM

$$i(5 + 6i) - (3 - 4i)$$

$$\boxed{5} + \boxed{6i} - \boxed{3} + \boxed{4i}$$

$$(5 + (-3)) + (6 + 4)i$$

$$2 + 10i$$

Apr 10-12:10 PM

$$\frac{2}{i^{49} - 5} = \frac{2}{i - 5} \cdot \frac{i + 5}{i + 5}$$

$$\frac{49}{4} = 12 \text{ r } 1 = \frac{2i + 10}{i^2 - 25}$$

$$= \frac{2i + 10}{(-1) + (-25)} = \frac{2i + 10}{-26}$$

$$\frac{10}{-26} + \frac{2}{-26}i$$

$$\boxed{-\frac{5}{13} - \frac{1}{13}i}$$

Apr 10-11:41 AM

$$i^{-19} = i^{-19 - (-23)} = i^{-19 + 23} = i^4 = 1$$

Apr 10-11:39 AM

$$(2 + 6i) - (4 + 10i)$$

$$2 + 6i - 4 - 10i$$

$$-2 - 4i$$

$$-2 + (-4)i$$

Apr 10-12:12 PM

$$-\frac{4}{i} \cdot \frac{-i}{-i} = \frac{4i}{-i^2}$$

$$= \frac{4i}{(-1) \cdot (-1)} = \frac{4i}{1}$$

$$\boxed{0 + 4i}$$

$$a + bi$$

Apr 10-12:14 PM

$$\begin{aligned}
 i^{13} &= (i^4)^3 \cdot i^1 \\
 &= (1)^3 \cdot i \\
 &= 1 \cdot i \\
 &= i
 \end{aligned}$$

Apr 10-12:16 PM

$$\begin{aligned}
 i^{33} &= (i^4)^8 \cdot i^1 \\
 \frac{33}{4} &= 8 \text{ r } 1 = (1)^8 \cdot i \\
 &= i
 \end{aligned}$$

Apr 10-12:18 PM

$$\begin{aligned}
 i^{34} &= (i^4)^8 \cdot i^2 \\
 &= (1)^8 \cdot i \cdot i \\
 &= 1 \cdot \sqrt{-1} \cdot \sqrt{-1} \\
 &= 1 \cdot \sqrt{(-1)^2} \\
 &= 1 \cdot (-1) \\
 &= -1
 \end{aligned}$$

Apr 10-12:19 PM

$$\begin{aligned}
 10.7 \\
 \#7) \quad &\sqrt{-12} \cdot \sqrt{-48} \\
 &i\sqrt{12} \cdot i\sqrt{48} \\
 &2i\sqrt{3} \cdot 4i\sqrt{3} \\
 &8 \cdot i^2 \cdot 3 \\
 &24 \cdot (-1) \\
 &-24
 \end{aligned}$$

Apr 10-12:23 PM

$$\begin{aligned}
 i^{-37} &= \frac{1}{i^{37}} = \frac{1}{(i^4)^9 \cdot i} \\
 &= \frac{1}{i}
 \end{aligned}$$

Apr 10-12:26 PM

$$\begin{aligned}
 \frac{17}{4} &= 4 + 1 \\
 &\quad \uparrow \text{remainder} \\
 i^{17} &= (i^4)^4 \cdot i^1 \\
 &= (1)^4 \cdot i \\
 &= 1 \cdot i \\
 &= i
 \end{aligned}$$

Apr 10-12:48 PM