

The deadline for all homework assignments is the one specified in Archie before 11:59 pm. As discussed in class, It must be correctly uploaded in order to be graded. Show all your work and justifications.

For Exercises **63–102**, perform the indicated operations. Write the answers in standard form,  $a + bi$ .

$$63. \left(\frac{1}{2} + \frac{2}{3}i\right) - \left(\frac{5}{6} + \frac{1}{12}i\right) = -\frac{1}{3} + \frac{7}{12}i$$

$$64. \left(\frac{3}{5} - \frac{1}{8}i\right) - \left(\frac{7}{10} + \frac{1}{6}i\right) = -\frac{1}{10} - \frac{7}{24}i$$

$$76. (10 - 3i)^2 = 91 - 60i$$

$$77. (3 - \sqrt{-5})(4 + \sqrt{-5}) = 17 - i\sqrt{5}$$

$$79. 4(6 + 2i) - 5i(3 - 7i) = 11 - 7i$$

$$80. -3(8 - 3i) - 6i(2 + i) = -18 - 3i$$

$$82. (3 - 2i)^2 + (3 + 2i)^2 = 10$$

$$81. (2 - i)^2 + (2 + i)^2 = 0$$

$$87. (10 - 4i)(10 + 4i) = 116$$

$$88. (3 - 9i)(3 + 9i) = 90$$

$$90. (-5i)(5i) = 25$$

$$91. (\sqrt{2} + \sqrt{3}i)(\sqrt{2} - \sqrt{3}i) = 5$$

$$93. \frac{6 + 2i}{3 - i} = \frac{8}{5} + \frac{6}{5}i$$

$$94. \frac{5 + i}{4 - i} = \frac{19}{17} + \frac{9}{17}i$$

$$89. (7i)(-7i) = 49$$

$$96. \frac{10 - 3i}{11 + 4i} = \frac{98}{137} - \frac{73}{137}i$$

$$92. (\sqrt{5} + \sqrt{7}i)(\sqrt{5} - \sqrt{7}i) = 12$$

$$100. \frac{6}{7i} = 0 - \frac{6}{7}i$$

$$95. \frac{8 - 5i}{13 + 2i} = \frac{94}{173} - \frac{81}{173}i$$

$$98. (4 - \sqrt{3}i)^{-1} = \frac{4}{19} + \frac{\sqrt{3}}{19}i$$

$$97. (6 + \sqrt{5}i)^{-1} = \frac{6}{41} - \frac{\sqrt{5}}{41}i$$

$$102. \frac{-2}{\sqrt{-11}} = 0 + \frac{2\sqrt{11}}{11}i$$

$$101. \frac{-1}{\sqrt{-3}} = 0 + \frac{\sqrt{3}}{3}i$$