

1.7

$$1) \frac{1+2i}{2+i} = \frac{(1+2i)(2-i)}{(2+i)(2-i)} = \frac{2-i+4i-2i^2}{4-2i+2i-i^2} = \frac{2+3i+2}{4+1} = \frac{4+3i}{5} = \frac{4}{5} + \frac{3}{5}i$$

$$2) \frac{1+i}{2-5i} = \frac{(1+i)(2+5i)}{(2-5i)(2+5i)} = \frac{2+5i+2i+5i^2}{4+10i-10i-25i^2} = \frac{2+7i-5}{4+25} = \frac{-3+7i}{29} = -\frac{3}{29} + \frac{7}{29}i$$

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

$$4) \frac{-3+i}{2+3i} = \frac{(-3+i)(2-3i)}{(2+3i)(2-3i)} = \frac{-6+9i+2i-3i^2}{4-6i+6i-9i^2} = \frac{-6+11i+3}{4+9} = \frac{3+11i}{13} = \frac{3}{13} + \frac{11}{13}i$$

$$5) \frac{-1+3i}{3-5i} = \frac{(-1+3i)(3+5i)}{(3-5i)(3+5i)} = \frac{-3-5i+9i+15i^2}{9+15i-15i-25i^2} = \frac{-3+4i-15}{9+25} = \frac{-18+4i}{34} = -\frac{18}{34} + \frac{4}{34}i = -\frac{9}{17} + \frac{2}{17}i$$

$$6) \frac{-2-2i}{-1+3i} = \frac{(-2-2i)(-1-3i)}{(-1+3i)(-1-3i)} = \frac{2+6i+2i+6i^2}{1+3i-3i-9i^2} = \frac{2+8i-6}{1+9} = \frac{-4+8i}{10} = -\frac{4}{10} + \frac{8}{10}i = -\frac{2}{5} + \frac{4}{5}i$$