1. What are reasonable pre- or post- conditions for the following incomplete Hoare triples?

```
{  true   }    x := 5                           {                    }

{          }    x :  = x + 3                     {    x = y + 3    }

{          }    x := x * 2 + 3                   {    x > 1        }

{  x = a  }    if (x < 0) then x := -x    {                    }

{  false  }    x := 3                           {                    }

{  x <  0 }    while (x != 0) x := x − 1   {                    }
```

2. Consider the following triples:

```
{ z = y + 1 }    x := z * 2    { x = 4 }

{ y = 7       }    x := y + 3    { x > 5 }

{ false       }    x := 2 / y    { true   }

{ y < 16     }    x := 2 / y    { x < 8 }
```

    a. Which of the above are valid?

    b. For which of the valid triples:
        i. Can you write a stronger postcondition? Leave the precondition unchanged, and ensure the resulting triple is still valid.
        ii. Can you write a weaker precondition? Leave the postcondition unchanged, and ensure the resulting triple is still valid.