

VG generation

$$vc(\{x=m \wedge y=n\} p:=1; \{p*x^y=m^n\} \underline{\text{while}} \neg(y=0) \underline{\text{do}} p:=p*x; y:=y-1 \{p=m^n\})$$

$$= vc(\{x=m \wedge y=n\} p:=1 \{p*x^y=m^n\})$$

$$\cup vc(\{p*x^y=m^n\} \{p*x^y=m^n\} \underline{\text{while}} \neg(y=0) \underline{\text{do}} p:=p*x; y:=y-1 \{p=m^n\})$$

$$= \{x=m \wedge y=n \Rightarrow 1*x^y=m^n\}$$

$$\cup \{p*x^y=m^n \Rightarrow p*x^y=m^n, p*x^y=m^n \wedge \neg(y=0) \Rightarrow p=m^n\}$$

$$\cup vc(\{p*x^y=m^n \wedge \neg(y=0)\} p:=p*x; y:=y-1 \{p*x^{y-1}=m^n\})$$

$$= \{x=m \wedge y=n \Rightarrow 1*x^y=m^n,$$

$$p*x^y=m^n \Rightarrow p*x^y=m^n,$$

$$p*x^y=m^n \wedge \neg(y=0) \Rightarrow p=m^n,$$

$$p*x^y=m^n \wedge \neg(y=0) \Rightarrow (p*x)*x^{y-1}=m^n\}$$